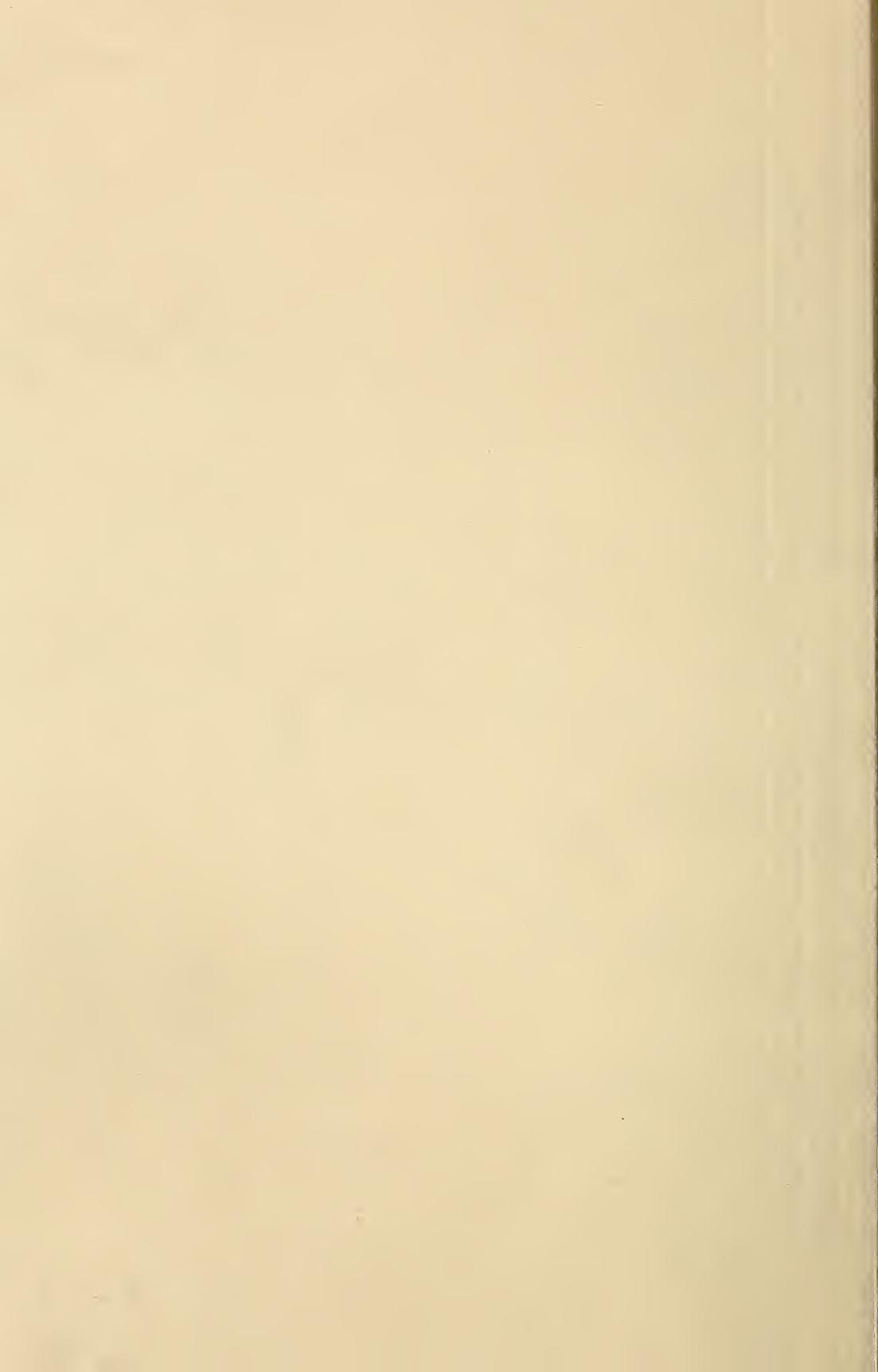


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VOL. XXVIII.

FEB. 1, 1900.

No. 3.



THAT PLAN of getting the water out of a honey-can with a sponge, p. 53, might be finished up by setting the can on the stove. Our folks omit the sponging. No danger if the stove isn't too hot and the can not left too long.

FRIEND A. I. ROOT, that's an admirable piece of work you've done on p. 60 as a peace-maker. If you ever hear that my wife and I have parted, pack your grip right straight, and come and reconcile us. I'll pay freight on you to Marengo.

THAT QUESTION of J. T. VanPetten, p. 51, is a rather troublesome one, and applies in many cases. "After I've been to extra expense to get ahead of my fellow, and then he is to the same expense to get even with me, what has either gained?"

AMERICAN BEE-KEEPERS ought to be farther ahead at the end of the century than the Germans. The German bee-journals have started in on the 20th century, while in this locality we have nearly a year of the 19th left. [See Pickings.—ED.]

I ARISE to inquire why it is that we have no reports nowadays from apicultural experiment stations. There's an unsatisfied longing ever since Hon. R. L. Taylor left off his very interesting reports. I wish he had never departed this life as an experimenter.

THAT CUT on page 57 is an exact picture of my latest honey-extractor. I bought it from J. L. Peabody himself, somewhere about 1870. Since I gave up extracted honey it seldom gets a chance to work; but when it does, it works just as well as ever. But, of course, it isn't a Cowan.

MR. HONE "thinks the dairy business detrimental to bee-keeping, as cattle eat sweet clover," etc., p. 43. Not in this locality. I'm right in the heart of the Elgin dairy region, more butter being made in a given area around Marengo than Elgin, and I'd be sorry to have the cows killed off. It's true they eat the flowers; but that's what keeps up a succession, lengthening the season.

WHY, OH! WHY, do you print that long-tongue talk, p. 55? I've been quiet about it for a long time, and now you stir me all up again with the question: If there's so much difference in bees' tongues that some tongues are 38 per cent longer than some other tongues, why may we not breed for tongues as well as colors?

"I SOMETIMES WISH," says ye editor, p. 47, "I were free to go back to those old days now." You'll outgrow that. I'm at least five years older than you, and my best years have been since I passed your age. And I'm expecting it will be better farther on. [I did not say that I *always* wished. No, I would not go back, in my cool, sober moments, to the days of childhood. I am quite content to be just where I am.—ED.]

HAVE YOU PUT Doolittle cell-cups on the list of bee-keepers' supplies? If so, at what price? [No, yet I suppose we ought to; but before we put them on the market we desire to perfect a machine that will make them in a wholesale way, so we can sell them by the peck, and not by the single one. At present I fear you would not like to pay the price. They can be made by the dozens very cheaply, when one has nothing else to do, and the only reason why we have not made them is because we have not had time to put brains into a machine for doing it.—ED.]

I WANT very much to see A. I. Root. I want to see how he looks since he has become interested in flowers. I'm sure he must be a nicer man—and a better man. [Yes, it is indeed true—A. I. R. is riding another hobby. You ought to see the enthusiasm that plays on his face. He grows lettuce and a little garden-stuff in the greenhouse, to be sure, but it is easy to see that his new fascination is growing posies. Every once in a while he calls us over to see his latest acquisition. Say, doctor, you ought to be here and hear him talk bulbs, roses, variegated colors, etc.—ED.]

THE ADVANTAGES of tall sections are well put by you on page 51, Mr. Editor, but the last one won't do: "A tall section will stand shipping better than a square one, in proportion as it is taller." Do you think a section ten inches high will be more solid than one an inch high? It's true the tall one has more perpendicular

attachment, but it has more perpendicular weight. A section an inch high will ship safely if secured at top and bottom with no side attachment, but one ten inches high would come to grief. See? [Carrying the sentence to its logical conclusion, perhaps it is a little strong; but what I meant to convey was that a section 4x5 will stand more hard usage in shipping than a section 4¼ square.—ED.]

GERMAN BEE-KEEPERS are somewhat moved over the death of *Die Nordlinger Bienenzeitung*, at one time the ablest of the German bee-journals, and the oldest in Germany, having lived 55 years (wasn't it the oldest bee-journal in the world?). Its able editors were succeeded by Herr Dickel, who used its pages to advocate the theory that all the eggs laid by a queen are alike, and that workers can rear a queen out of drone eggs, and then it died. [The demise of this, the oldest of all bee-journals, was talked over after the sessions of the Geneva convention. It seemed rather too bad that a journal with such a history could not have continued its name at least. If it had lived in this country, at least one of its cotemporaries would have jumped at the chance of buying its name.—ED.]

R. C. AIKIN is striking some heavy blows nowadays, in *Progressive*, in favor of selling honey in the candied state. The fact that he has succeeded—grandly succeeded—in it himself, is an argument hard to be overcome by those who say the thing can not be done. If I had a trade in extracted honey that I expected to close with the year, I'd sell honey only while liquid, gathering it up from time to time to melt; but if I expected to stay in the same place for three years, I'd train my customers to do their own melting. Might be tough the first year, but I'd be solid with my customers after that. [There is no denying the fact that Aikin has done some grand work in demonstrating that there is a sure and steady market for granulated honey. It was uphill work with him at first, but now his customers expect it, and some even prefer it to candied.—ED.]

THE *Chicago Record* reports 220,518 U. S. licenses for the manufacture and sale of liquors, and counts three persons employed for each license—a low estimate (some brewers and distillers employ several thousand men), making one liquor-seller to every 114 of the entire population. Yet there are people who would utterly wipe out so important an industry, throwing out of comfortable employment about one man out of 23. Just think of it! [Yes; and, unfortunately, there are hundreds and thousands of people who, if they do not really believe such logic, try to make others believe it. But the tide is changing, and the time will surely come when such talk will be regarded as the rankest heresy. Believe it? I believe it as much as I believe there will be a sun to-morrow, even if I can not see it.—ED.]

MR. EDITOR, on p. 54 you suggest a ¾ strip for the Doolittle division feeder, "suppose bees did get drowned." That ¾ strip in a 1¼-inch space may get to one side, leaving a ⅜ space. Now, suppose bees get drowned in that ⅜ space; wouldn't it be well to put

in a ¼-inch strip? "No sense in supposing that?" Now, look here; you never will be fair. I've just as good a right to suppose they'll drown in a ⅜ space as you have to suppose they'll drown in a 1¼ space. Suppose we don't suppose foolish things to take up room in either case. [No danger of bees drowning, when by a little squirming they can reach some solid object. If a bee gets out into the middle of a pan of syrup it will tire itself out, often, before it can reach the side of the pan; but if it is within an inch of the side, or of some object, it will very quickly get on terra firma.—ED.]

YOU HINT rather broadly, Mr. Editor, p. 59, that I ought to keep away from Colorado. Now, really, if I should settle down with my bees next door to Rauchfuss or some other nice fellow, do you think there would be any thing criminal in that? [Nothing criminal about it at all, but you would get into trouble all the same. I know of one bee-keeper who did that very thing by setting an apiary down near one of the yards of the Rauchfuss brothers. The latter simply made their yard up into powerful extracting colonies, and then brought in more bees. The result was, that the other fellow, who had come in to divide the profits with his little *eight-frame comb-honey* colonies, did not get much of a show. Those powerful jumbo colonies simply ran the little fellows out of business. If I am correct, the interloper moved away soon after, as he concluded there was not much honey in that locality.—ED.]



Our coldest month is very warm,
The air is full of fog;
The drizzly rain comes slowly down,
And next we'll hear the frog.

BEE-KEEPERS' REVIEW.

The issue for January is an excellent one. Mr. Hutchinson's remarks on buying a good camera are worth all his paper costs for a year. He devotes over a page to the new or proposed spelling, seeing little in it but a change, the trouble of which would not be offset by the very slight shortening of a few words, which, however, he says, is not phonetic spelling after all.

BRITISH BEE JOURNAL.

Concerning the preparation of honey for market, the editor points out some evils that are not unknown on this side of the ocean. He says:

Numbers of bee-keepers—many of whom are men not short of common sense—utterly lack the simplest aptitude for preparing honey for sale. Careless to a degree, they will use old, soiled, and dirty sections for storing the new season's honey in, the very look of which would cause their rejection for use on any decent table. If sent by rail they are often packed so badly as to be irretrievably damaged in transit, and so on.

A view of John Brown's house and apiary in Cornwall is given. The house is made of stone, and what would be the "front porch" in this country is covered entirely with glass, making a pretty little greenhouse at the front door. That's a good idea, and I hope it will go "marching on." Perhaps a little diplomacy will enable us to show the picture itself.

In regard to the folly of putting very poor honey on the market, the following is a case in point, copied from the leading editorial in the issue for Jan. 4:

In 1898 the small crop secured was so deteriorated in quality by the general admixture of honey-dew that it would have been greatly to the advantage of the craft if the whole crop so damaged had been left with the bees and not forced on the market at all. Many bee-keepers, however, chose to put up their poor stuff for sale, and no doubt hundreds of buyers got a taste of British honey such as they will not forget in a hurry. This has probably told more heavily than many suppose in lessening the demand for table honey; and, in order to sell at all, prices have been brought down to a point low enough to cause much natural grumbling.

Mr. J. E. Roden wanted some honey, and advertised for samples. His success is thus graphically described:

The thinnest sample of all was in a bottle minus cork or stopper, but tied over with tissue paper, which on arrival was nothing more than pulp, of course. There were also several very thin glass bottles, which had been entrusted to the tender mercies of the post-office, wrapped in a sheet of ordinary paper only, with the stamps affixed to the parcel itself instead of to an attached label. The result of obliterating the said stamps had been to smash the bottles, thus producing a sticky mess of honey mixed with broken glass, torn paper, and bits of string, etc. And, with a few exceptions, many of the samples suffered from a regrettable lack of strict cleanliness, while others contained particles of foreign substances, and some had been so badly managed as to be in a state of active fermentation or worse.

What *can't* be mailed in England? Such packages in the United States would never be admitted to the mails.

Is this the first year of the century? That is what agitates the British mind. Lord Kelvin says "time is counted from 0, and for the first 365 days we are progressing from zero to one year. The first century began with 0, and ended Dec. 31, 99." That is, if I owe 100 cents, payable a cent a day for 100 days, I make a payment of 0 cent, and stop at 99, and begin a new dollar with the 100th cent. Would Lord Kelvin call that a dollar? The era did not begin with the year 0 nor with any other. It was begun about A. D. 535 on the false assumption that Christ was born in the year 1, and we shall have to hold to that idea, although as a basis it should be 4 years earlier than it is. France calls this the last year of the century. When a year is counted it is a mere atom of time, having no beginning or ending. A child born Dec. 31, 1900, has seen this year as truly as one born Jan. 1.

Just here comes a German bee-paper called *Bienen-Valer*, and it speaks of being at the end of the century, but immediately adds, "Even though the 20th century should begin with 1901, *Bienen-Valer* means when one begins to *write* a new century, then it should be celebrated."

Further, the *Centralblatt*, of Hannover, says, "Two naughts. That is the end of the 19th century."

And here is the settler itself:

Ed. Chicago Tribune:—The 20th century begins Jan. 1, 1901. It has been agreed to call the first year of the Christian era 1 and not 0. This was decided in Glasgow, April 15, 1870.

W. H. M. CHRISTIE,
Astronomer Royal.

In the Isle of Man, in cutting a tree the woodsman was surprised to find an immense bees'-nest. As soon as a hole was made the bees poured out for two hours. Over 70 lbs. of honey was secured.

British bee-keepers are bothered by a little bird called "tit." One bee-man placed strips of brown paper covered with bird-lime on the alighting board and caught two birds at once. By the way, how is bird-lime made?

There, now, after writing the above I find that David Ross, of Kansas, on p. 903 of this journal for 1887, tells all about it. I believe I will give the recipe next time.

LE RUCHER BELGE.

This superb French journal, for 1900, is printed on new type, heavy face, presenting a most beautiful appearance. For ten years it has been ably edited by Mr. A. Wathelet, at Liege, Belgium, and is fully up to the times.

CANADIAN BEE JOURNAL.

A far better and brand-new type is used now on the *Canadian Bee Journal*; the uncouth side-heads and border decorations have been discarded, and the whole journal presents the inviting appearance that might be expected from a Londonderry man. Mr. Craig and his readers are to be congratulated. Speaking of one kind of "honey dew," the editor says:

Men have been rejected in considerable numbers who sought enrollment in the U. S. army, because they have what is called a "tobacco heart." There are many evil fruits which flow out of "small vices," unwisely adopted and needlessly continued.

VALUE OF BEES IN FRUIT-ORCHARDS.

New Light through the Efforts of Fruit-growers; the Effect of Cross-fertilization in Enlarging Fruit as well as Seeds.

BY J. E. CRANE.

It is not my object in this paper to thrash over old straw, but rather to gather some golden grains of truth from a harvest of facts that has ripened since the memorable discussion of this subject a few years ago, and gathered into a most interesting symposium.

Perhaps nothing in that symposium was more noticeable than the difference of honest opinion held by many intelligent observers, and for good reasons as the sequel will show. It is an interesting fact that the new light on this subject has come through the efforts of the fruit-growers rather than the bee-keeper, and that the solution of the problem is a most complete proof of the value of bees to the fruit-grower.

Before giving the new facts that have come to light on this subject I must tell how it came about.

Many years ago, down in Virginia, a farmer planted out a large pear-orchard. As he was a bright man he thought he would make a very profitable investment, and not plant any unproductive trees. As Bartlett pear-trees are almost universally known as the most productive as well as profitable, he planted his entire orchard of this variety. He cultivated his orchard with great care, fertilizers were applied, and when he looked for fruit he found "nothing but leaves." But he kept on until his means were exhausted and his place went under a mortgage. The new owner thought he had a bonanza in that pear-orchard, and he too cared for it until his ability to do so failed, when it passed into the hands of another person; but still it failed to yield a crop of fruit. I take it that the last owner had some faith in "book farming," for he sent to the Department of Agriculture at Washington for a solution of the problem of an unproductive orchard of Bartlett pears. Mr. M. B. Waite, of the Department, was sent down to study the subject on the ground. He guessed the trouble to be the lack of cross-pollination with other varieties, and, fortunately, he guessed right. More or less of the orchard was grafted with other varieties; but before it came into profitable bearing it was struck with "blight," and ruined. But it had served a useful purpose. A new interest was taken in the subject of the effects of self and cross pollination of fruit-blossoms, and the scientific study of the subject began. This was carried out by taking pear and apple blossoms just before they open, and removing a part of the blossom and then applying either pollen of the same variety or some other variety, and covering at once to prevent insects from interfering. In this way it could be told whether a given variety would prove fertile with its own pollen or not, and just the effects of crossing with other varieties.

As a result of these studies Mr. Waite says, "Many of the common varieties of pears require cross-pollination, being partially or wholly incapable of setting fruit when limited to their own pollen. Some varieties are capable of self-fertilization. Self-pollination takes place, no matter whether foreign pollen is present or not. The failure to fruit with self-pollination is due to sterility of the pollen, and not to mechanical causes, the impotency being due to lack of affinity between the pollen and ovules of the same variety."

"Varieties that are absolutely self-sterile may be perfectly cross-fertile. The normal typical fruits, and in most cases the largest and finest specimens from both the so-called 'self-sterile' and 'self-fertile' varieties, are crosses."

"Self-fecundated pears are deficient in seed, and the seeds produced are usually abortive. The crosses are well supplied with sound seeds."

He gathered most of the cross and self-pollinated fruits resulting from most of his experiments for study and comparison, and

found, as a rule, a decidedly better development of the blossom end of the fruits of those cross-pollinated than those self-pollinated. He found, also, a disposition or tendency in self-pollinated late varieties of pears to wither before ripening, while those resulting from crosses ripened perfectly. My son has offered to copy several of Mr. Waite's illustrations.

Fig. 1 shows a Bartlett pear crossed with pollen of Easter pear. No. 2 shows a self-pollinated Bartlett pear. No. 3 shows seeds under *a* from cross-pollinated Bartlett pears; under *b*, seeds from self-pollinated pears.

About three-fifths of the varieties of pears experimented upon appear to have been wholly self-sterile, or were greatly benefited by cross-pollination.

Even with those varieties capable of self-fecundation, the pollen of another variety is prepotent (more powerful); and unless the entrance of foreign pollen is prevented, the greater number of fruits will be effected with it.

As apples blossom soon after pears, a large amount of work was done with them to ascertain the effects of self and cross fertilization. He says, "In a general way the results were similar to those obtained in the experiments with pears. The division of the varieties into self-sterile and self-fertile sorts was not nearly so well marked.

"Crossing gave decidedly better results in all cases than self-pollination. The Baldwin, which was experimented upon freely, may be cited as a variety that comes as near being self-fertile as any, and yet even this is far from being entirely so; for in the best trees the percentage of fruit resulting from self-pollination was not more than a fourth of that which resulted from crossing. Some of the Baldwin trees, in fact, seemed to be self-sterile, and all the varieties occasionally set self-pollinated fruit."

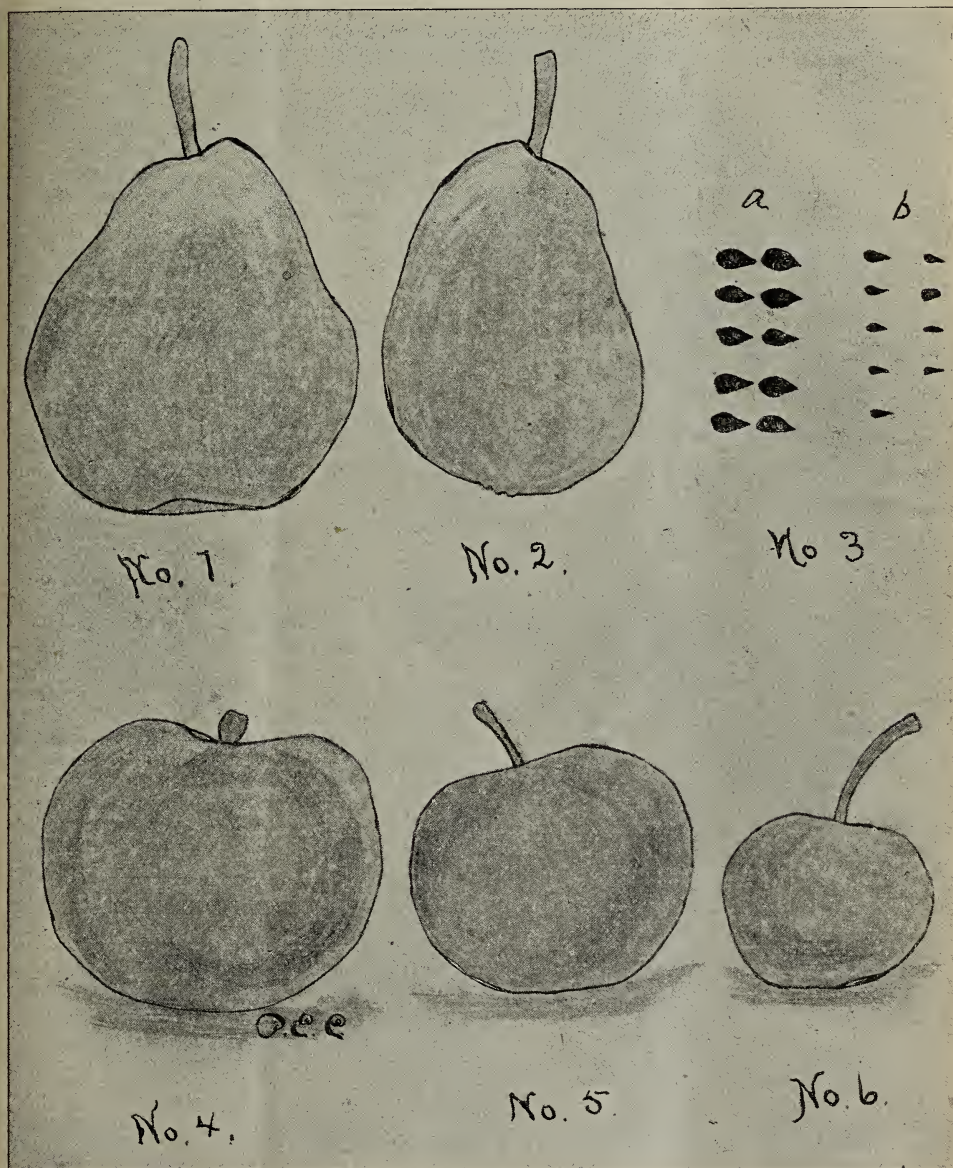
He does not seem inclined to place much confidence in a strict classification, even of pears, as a variety may be quite self-sterile in one section, as in the North, and yet be quite self-fertile in the South or in some other season.

Among the sorts of pears he found more or less completely self-sterile are the Bartlett, Anjou, Boussock, Clairegeau, Clapp's Favorite, Sheldon, Louisa Bonne de Jersey, and other common varieties. Still less would it be possible to classify apples. A variety may be self-fertile this year and quite the reverse next year, or in one section of country and not in another. The weather at blooming time is important. He says, "The weather during the blooming period exerts both a direct and indirect influence on the setting of fruit. Even when not injured by frosts, the blossoms are often chilled by the cold to such an extent as to interfere with fecundation. Moderate cold renders the self-fertile trees self-sterile, and severe cold renders them sterile to cross-pollination as well. Warm and sunny weather at this time indirectly aids the fertilization by favoring insects in their work of cross-pollination."

The results of self-pollination in apples are

very interesting. Again I quote from his paper: "The apples resulting from some of the experiments were collected and studied, and the results were found to be parallel with those obtained in the experiments with pears, the crosses being larger, more highly colored, and

of apples not bagged from the same tree, and the self-fertilized fruits corresponded with the under-sized, poorly colored specimens from the same trees." The italics are my own, for I wished to call attention to the inferior quality of apples produced by self-pollination, ren-



better supplied with seed. For example, *the hand-crossed Baldwin apples were highly colored, well matured, and contained abundant seeds, while the self-fertilized were only slightly colored, were but one-fourth to two-thirds the regular size, and seedless.* The crosses were, in other words, like the better specimens

dering them of little value except for cider or swine.

Fig. 4 of my illustrations shows a Baldwin apple crossed by pollen of the yellow Bellflower, while No. 5 shows a large specimen of Baldwin self-crossed, and No. 6 a small specimen of the same. The effects of cross-ferti-

zation in increasing the size of fruits is an exceedingly interesting fact.

Prof. Munson, of the Maine Experiment Station, has found that the size of tomatoes may be quite dependent on the amount of pollen they receive while in bloom. One receiving a large amount may be four times as large as one receiving only a small quantity. We have, doubtless, all observed that a pea-pod that has set only one or two peas is greatly dwarfed in size. What the pod is to the pea, the skin and pulp are to the apple seeds. Facts prove, beyond the shadow of a doubt, that the cross-pollination of apples does affect not only the seed but the fruit also.

Prof. Waite gave considerable attention to the quince, but did not find so great a difference, and the fruits were as perfect and as abundant where self-fertilized as when crossed.

This is not as we should have expected, but we should be satisfied with the truth.

Prof. F. A. Waugh, of the Vermont Agricultural College, has been at work along this same line in a careful study of the numerous varieties of native and Japanese plums, and has found them, almost without exception, self-sterile here in the North.

In concluding his paper Mr. Waite says, "The number of insect visitors in any orchard determines to a great extent the amount of cross-pollination carried on. The pollen of the pear and apple is not produced in sufficient quantity, nor is it of the right consistency, to be carried by the wind; and the pollination of these trees is, therefore, dependent on the activity of insects. . . . If there is no apiary in the neighborhood, therefore, each large orchardist should keep a number of hives of bees. Honey-bees and other members of the bee-family are the best workers in cross-pollination."

His advice to fruit-growers is to plant not more than three or four rows of any one variety together, unless the variety is known to be perfectly self fertile, and be sure there are enough bees in the neighborhood, or within two or three miles, to visit properly the blossoms, and, when possible, to favor the bees by planting in a sheltered situation, or by planting windbreaks.

I must confess a keen enjoyment in again taking up the study of this subject under the light that recent scientific investigation by careful, painstaking, and unprejudiced observers has thrown upon it. We can now see why there was such a variety of opinion on this subject in the symposium referred to. We find that, while some varieties of both apples and pears are, under favorable conditions, capable of self-fertilization, yet a majority of the various varieties of apples and pears are either wholly dependent on insect visits, or greatly benefited by them, in setting and maturing their fruits.

Should any wish to study this subject further, I would refer them to a paper by M. B. Waite, Assistant Pathologist, Division of Vegetable Physiology and Pathology, in the Year-book of the Department of Agriculture for 1898, which I wish might be placed in the hands of every fruit-grower of the land.

Prof. L. R. Jones, of the Vermont Agricultural College, informs me that Mr. Waite is quite conservative, and does not overestimate the value of bees in this connection.

Middlebury, Vt.

HARRINGTON'S MULBERRY APIARY.

Mulberry-trees for Windbreaks; a Pneumatic Wheelbarrow for Carrying Bees.

BY M. W. HARRINGTON.

I send a picture of my 100-colony apiary. As you can see, I keep my bees in straight rows, as I use a spring cart to carry the combs to the extractors in the honey-house. I also have 4×16-feet adjustable shades, or roofs (on post), over my bees. I have a double row of Russian mulberry-trees five feet back of the north row of bees, for a windbreak and shade, which gives me and family a lot of fruit as well as the birds. The birds take the mulberries in preference to the other and more valuable fruit.

By the way, the mulberry-tree makes the quickest and cheapest windbreak of any tree I know of.

In the picture your humble servant is looking over a comb of bees, resting it on the comb and tool carrying rack, with my observation hive just back of it, and a red cedar in the foreground.

I use a pneumatic and spring wheelbarrow to pick up (in row) and carry my bees clear into the repository in the cellar, so that the bees scarcely know that they are being handled at all, besides the perfect ease of carrying them. I have cellar space for only about 50 colonies or hives.

Williamsburg, Iowa.

[Pneumatic wheelbarrow—that is something new. I wish you had also sent us a photo and a description of it. It is not too late yet. Send us a picture that we may show it to our readers. Your apiary looks very inviting. It must be a pleasant place to work in.—ED.]

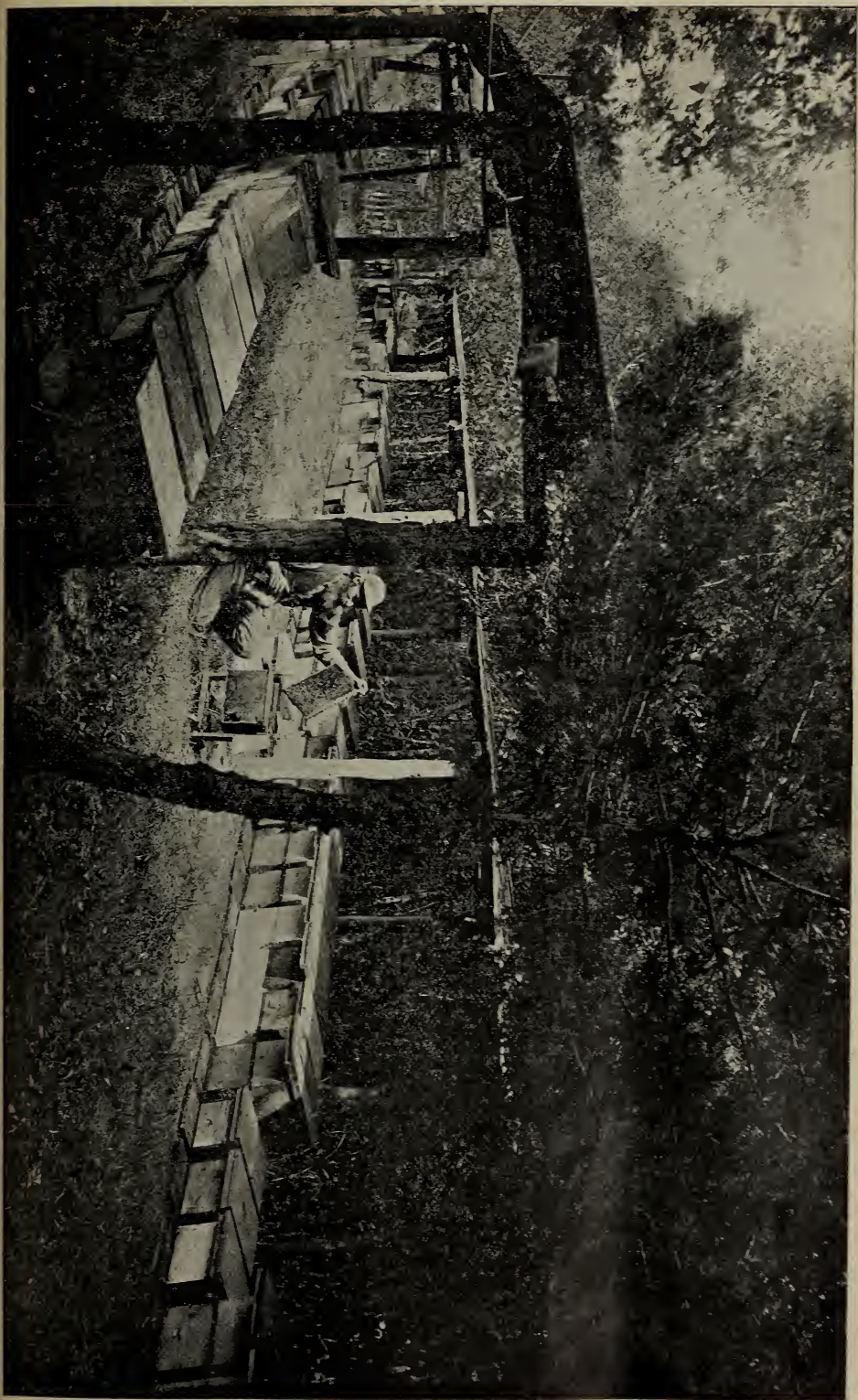
THE DIVISION-BOARD FEEDER.

Suggestions Concerning it; the Difference between Good Wax and Poor Wax; How to Refine Wax.

BY E. H. SCHAEFFLE.

In a recent number of GLEANINGS a feeder was illustrated for inside feeding. The idea is a good one, but I think it will be found a nuisance in this, that it will hold but a limited amount of honey unless it is given the space of two frames; and when you come to refill, it will be full of bees that will have to be driven out or drowned in the honey. Allow me to suggest that it be made of tin. Along the bottom on each side have a string of small holes, and outside of these a flange extending above and $\frac{1}{4}$ inch out from the feeder. On the bottom have a screw cap.

To fill the feeder, turn it upside down, fill through the screw cap, screw it down tight,



HARRINGTON'S MULBERRY APARTY, WILLAMSBURG, IOWA.

and then reverse the feeder; this will make an atmospheric feeder that will feed itself as long as there is any honey in the feeder, and will not be full of bees; then, too, it will hold a good quantity of honey.

My honey crop figures up a little over 3000 pounds—not bad for a “bad season.” I shipped it to San Francisco, and realized $7\frac{1}{2}$ cts. Beeswax, 53 lbs., sold for 26 cts. Why is it that there is but two cents’ difference between the poorest and best wax? One season a bee-keeper brought me his wax and requested me to ship it with mine. I placed it in the solar wax-extractor. When it was all melted there remained a spongy mass of black filth. I then melted the wax, and, to my surprise, found it would not leave the can. Mine always separates from the sides. I was compelled to cut the can apart to get it out. Now, after this re-cleaning it was still a dingy-looking mess, so I shipped it by itself and stated that it came from another party. My wax was as bright and clean as it is possible to make it; yet when I received my returns the two lots brought the same price. I am satisfied that the dirty wax was largely suet. A poor article of wax should not bring over 20 cts., while a No. 1 article should at all times command 30.

I have been looking for that honey-leaflet for months past. I inclose a recipe for it, provided it passes Mrs. Root’s inspection.

HONEY AND ALMOND CAKE.

Boil one pound of honey. After it has boiled, and while still hot, stir in one pound of flour, $\frac{1}{4}$ pound of coarsely chopped almonds, browned in $\frac{1}{4}$ pound of sugar (heat the sugar *without water*; when it has melted stir in the nuts; allow it to cool, and then separate the nuts so they will mix well). Add one teaspoonful of ground cinnamon, $\frac{1}{2}$ teaspoonful of ground cloves, a handful of chopped citron, and a scant teaspoonful of soda dissolved in a little water. Mix well, spread on a floured tin, and bake. While still warm cut into squares.

Murphy’s, Cal.

[There would be a difficulty in making the division-board feeder take the place of two frames, for the reason that the bees would be very likely to go inside, build comb, and fill the same with syrup right direct from the feeder. Indeed, they did do that to a limited extent, even with the feeders that were only $1\frac{1}{4}$ inches wide inside. To increase the width would make the temptation all the greater.

In practice we find it better to use two such feeders, one on each side of the brood nest, when we desire to increase the quantity fed at a time. When, however, we wish to give the bees at least ten or twenty pounds at one feed for winter, then we use the Miller.

A division-board feeder made of tin on the plan you describe would no doubt work; but after considerable feeding, year after year, we have come to the conclusion that feeders of *metal* are too cold for the bees. When constructed of wood, the bees will take the syrup when they would not go near the same feeder if it is made of tin. This idea of “metallic coldness” would have very little weight with

you in your climate; but for most localities it would mean much.

So you do not understand why there should be so little difference in the quotations of the very best and the medium grades of wax. We make a difference of 2 cents, sometimes 3, when the wax is of extra quality or of very poor quality. That is to say, the poor quality might bring 24 cts., and the very best would bring 27. If it is pure beeswax, the medium grades are worth to us within 2 cents as much as the very best, because with our processes of refining it does not cost us more than 2 cts. to bring the medium grades, and even the dirty grades, up to the very best, even counting out the very slight amount of dross that is left after refining. But this dross is by no means wasted; for after a second refining, using more acid, more wax still can be taken out, and the last remnant consigned to the solar wax-extractor, to be treated to a gentle heat for several days. After that it may have to be subjected to the wax-press. But whatever we can get out of this dross or “slumgum,” as we sometimes call it, it is just so much clear gain.

We have no secret process of refining, for our wax-room is open to inspection to any bee-keeper. We simply have a large wooden tank capable of holding about ten barrels. Into this is poured about a barrel and a half of water, acidulated with about two per cent of raw commercial sulphuric acid. The hogshead—for that in reality is what it is—is then filled with commercial wax of all shades and colors, and the whole is then treated to a jet of steam. After it is thoroughly melted the pipe is withdrawn, the tank is covered, and allowed to stand over night. The next morning the wax is ready to draw off through faucets located at different heights on the tank. During the night the acid and water, by reason of their greater specific gravity, settle down out of the wax, leaving it on top; during the same time the dirt now free from the wax settles into the water. The wax is then drawn off into deep cans, and usually has a bright yellow color, so totally unlike the product that went into the hogshead that one could hardly realize the two are one and the same.

Of course, it is impracticable for the average bee keeper to use so large a hogshead; but he can use practically the same methods with an ordinary barrel, reducing the quantity of acid and water, but, of course, keeping the relative amount of acid the same.

The quantity of acid in any case will depend largely on the color of the wax before it goes into the refining-vat. If the whole batch is almost black, then we would use about 5 per cent of acid to water. If some of it is black, some yellow, some brown, then we would use about the per cent first named.—ED.]

J. A. J., Del.—If you have combs of sealed honey, by all means give these to the bees that are short rather than to feed bees sugar syrup at this time of the year. Indeed, I may say as a rule that, when we have combs of sealed stores, and plenty of them, it would be folly to undertake the expense of feeding.



WINTERING BEES.

Question.—Having read what you have to say on cellar wintering, found in the January 1st GLEANINGS, I should like to have you tell us something more about wintering bees in general, not confining your remarks exclusively to cellar wintering, as very many of us winter our bees out on their summer stands. Give us something practical on general wintering as soon as possible. From a beginner.

Answer.—If the writer of the above question will turn to page 19 of January 1st GLEANINGS, he will find the editor saying, near the middle of the second column: "Say as much as we like, cold is the principal agent that causes dysentery," and dysentery, or "bee diarrhea," as it is generally termed, is the chief cause of our winter losses. Then we find the editor saying that "an apiary badly attacked with dysentery will be cured just as soon as warm weather sets in." Now, while I do not just agree with this last statement, it is not my object to attack that statement here; but by putting the "cold" and the "warm" together, say that the *why* "cold is the principal agent," comes from the fact that the cold confines the bees to their hives; and where this cold (therefore confinement) is long continued, the result is bee diarrhea; and I go on record as saying that *no* colony of bees could ever live to breed up again where cold in varying degrees continues long enough to keep the bees fully confined to their hives for eight successive months, no matter how good the food, how dry the air, nor how nearly perfect might be all other conditions.

But now more nearly to the question of our correspondent. And to best tell him what he wishes to know, I will give, as nearly as I can, a conversation which passed between a neighboring bee-keeper and myself a short time ago. After passing the usual salutations, and remarking about the weather, etc., as nearly all do when meeting, he asked, "About how much honey does a colony of bees consume during the winter?"

I replied, as nearly as I can remember: "When bees remain in that quiescent state which is required for safe wintering, a pound of honey a month suffices the whole colony; and in this state a colony would pass from four to six months with ease, according to their surroundings; but if the colony becomes uneasy from any cause, the bees will eat from five to seven pounds a month, and soil their hives and themselves so as to cause their loss in from six weeks to two months from the time they commence to eat so voraciously."

"But is there no way to prevent their eating so much?"

"To help to control this appetite, cellar wintering has proven about the best plan in cold climates, because, from the even temperature maintained, the bees need but little food to

keep up the necessary warmth they require during this period of partial inactivity which our northern winters compel them to pass through. As but little food is required, the body of the bee easily contains said food after digestion, and thus all goes well."

"But must all winter in the cellar?"

"No. Next to the cellar comes chaff-packed hives, because, as the bees are surrounded by porous walls, which take off the moisture passing from the bees' bodies, also retaining the warmth generated by themselves, they are kept at a more uniform temperature than they would be without chaff packing. This lessens the consumption of honey, and enables them better to throw off a part of the moisture contained in their food, and to contain the rest till the weather shall be sufficiently warm for them to fly."

"By thus allowing the bees to fly occasionally, is not this better than cellar wintering?"

"This mode has a seeming advantage over cellar wintering, in that it allows the bees to fly if an opportunity permits, during the winter; but it is offset by a more uniform temperature in the cellar, and consequent decrease in the consumption of stores."

"Are there not other plans?"

"These two plans are about the only feasible ones, and are those used by our most practical apiarists."

"Is there any thing which helps or hinders these plans being a success?"

"Yes, there are other causes which help these plans to be a success or failure?"

"What about those looking toward a failure?"

"Those which look toward a failure are these: First, poor honey, such as honey-dew; the juice from decayed fruit, soured and unsealed stores, etc., because the bees have to take into their bodies an excess of that which is not *real* food to them to sustain their existence, thereby extending their bodies; and unless a chance to fly presents itself often, they must die."

"Any thing else looking toward a failure?"

"Yes, all causes which disturb them in their winter repose; because, as soon as they are disturbed, they take into their bodies more food than is required for their existence, thus placing them (with the best of food) in the same condition, or nearly so, they would be with poor honey."

"Then quietness is one requisite?"

"Yes; all should know how important it is that bees should have perfect quiet, that no mice or rats be allowed in or on the hives, and in cellar wintering that the temperature does not get so high or low that it makes them uneasy."

"Is that all looking toward a failure?"

"No; but few bees, or mostly old ones, tends greatly to failure, because, if but few bees, they can not keep up the desired warmth without consuming an undue quantity of food, thus thwarting the object we are seeking after; and if old bees, they will die of old age before the young ones in sufficient numbers hatch the next spring, thus causing what is known as spring dwindling."

"What are those looking toward success?"

"Those looking toward success are these: That those on the summer stands have a fly once in six or eight weeks; that each hive contain an abundance of bees (if not in this way, in the fall unite till they are); that they have plenty of good sealed honey, or sugar syrup, made of the best granulated sugar, a good queen, a hive so that the bees can cluster compactly, etc., because all of these things have a tendency to accomplish our object of keeping the bees in such a state of quietude that they can contain their excrement for a great length of time, for upon this hangs *all* the secret of successful wintering."

"But bees seem to die more rapidly when we have loss in the spring, from the middle of March till fruit-bloom, with purifying flights from once in two weeks to every day. How do you account for this?"

"Even so. This has been noticed by many apiarists. The reason is this: Their vitality was so impaired by the strain brought to bear on them, consequent upon their holding their feces four or five months during the cold of the winter, that they spring dwindled, or, in other words, they died of premature old age, as that which causes violent exercise of any kind shortens the life of the bee very fast; hence we have bees living only six weeks during June, July, and August, while those emerging from their cells in September and October live from six to eight months if they keep in that quiet state they should to winter perfectly."

"Well, I am glad I could have this talk with you, for in it ideas have been advanced which are well worth thinking of, and which, if practiced, will help solve the wintering problem."

If the above conversation does not cover the whole ground our correspondent wished, let him come again, specifying more minutely what he wants.



[I solicit questions for this department; but they must be put on separate slips of paper, and marked "GLEANINGS Department." If you desire an immediate answer, say so at the time of writing, and a private reply will be sent you in advance before your question with answer appears in these columns; but questions that are mixed up with business matters will not only be subject to considerable delay, but possibly will receive no answer at all.—EDITOR.]

WHY ONE COLONY GATHERS DARK HONEY AND ANOTHER WHITE.

Will you please tell me from what blossoms bees get the white honey? We have in our apiary one colony that, this last season, produced white honey of a delicate flavor, while another colony having the same conditions of time, range, and choice of flowers, gathered only amber honey of rather strong flavor. I suppose the difference is that the first is a better breed, coming from a good Italian queen, and that they have a more "esthetic taste" (if such a term might be used in this connection), else how can it be explained? Would

such a bee go to more trouble to get a certain quality of nectar than another?

Auburn, Cal.

N. V. HALL.

[This is a question that I can hardly answer. I know this: That black bees are more inclined to work on buckwheat, and Italians on clover. On my trips through New York I found evidences where blacks or hybrids would show partiality for buckwheat, and pure Italians to clover or basswood. Why this is so, I can not say.]

You do not say whether the bees in the one case were Italians and the others blacks; but certain it is that the dark honey referred to must have come from some other source than that of the white, for the mere difference in the bees would not affect the honey.

It is possible that individual colonies have individual tastes like individual bee-keepers. For instance, some of the York Staters prefer, even up, buckwheat to the best clover or basswood; and once in a great while we have a customer who comes in and calls for buckwheat—does not want any thing else.—ED.]

THE DRAPER JUMBO HIVE.

1. What are the practical results of the 10-frame Dovetailed hive with that extra $2\frac{1}{4}$ inches in depth?

2. Will it be necessary to use the queen-excluder with those deep frames, in running for extracted honey? I should like to see the report of those who have used them this season.

River Falls, Wis.

A. D. SHEPARD.

[1. In some localities these large deep hives seem to give better results than the smaller ones. A good deal depends on whether comb or extracted honey is sought. I can only suggest that you try a few of them in your locality; and if the few, after two or three seasons' use, seem to give better results than your regular standard Langstroth, then you would be safe in purchasing more of those Jumbos.]

2. This is a question that I can hardly answer. I should say, however, that it would not be as necessary to have perforated zinc on these large brood-chambers as on the smaller ones. Mr. A. N. Draper, of Upper Alton, Ill., who has had large experience with these big hives, is especially requested to give these questions further consideration.—ED.]

DRYING SMOKER WOOD WITH A COLD-FRAME.

I should like to say a few words in regard to fuel for smokers. As I live on a farm I find rotten wood the most convenient to use; but until last summer I was often bothered to get it to burn readily. Mr. R. L. Taylor says in the *Review* for September, "Fuel, if pieces of wood, should be kept under cover for two or three years, in a dry place," etc.; and Mr. Greiner says in last *GLEANINGS*, rotten wood may be dried sufficiently inside of two or three weeks, by exposing to wind and sunshine, if taken indoors every night.

Last spring I hit upon the following plan which I think away ahead of either. I took a

small cold-frame, set it in the apiary, with a good slant to the sun; put in some boards for bottom; set in some pans of rotten wood, and put on the sash. In a short time I had some fuel as dry as need be. By this plan it dries when the sun shines, and is kept dry at night with no watching.

Of course, as the dry is used out it should be replaced with more to be dried. If one could afford it, one of those Boardman wax-extractors would be just the thing.

Salem, N. Y.

EARL Y. SAFFORD.

DOOLITTLE FEEDER.

On page 895 of GLEANINGS you describe the Doolittle division-board feeder. Does not this feeder drown the bees? There seems to be nothing about it to prevent this; and in pouring in the syrup, wouldn't there be a number of bees in the bottom that would be covered? I should think it would be an improvement to have the hole near the end of the top-bar. Cloth would not have to be pushed back so far.

JOHN F. HENNESSY.

Ballston Spa, N. Y., Dec. 14.

[There is no danger of the bees drowning in a feeder like the Doolittle. The sides of the feeder are so close to each other that the bees can easily reach the sides and crawl out in case they should fall into the feeder. The majority of hives have the quilts running the other way; but, of course, in making the feeders one can bore the holes near the end. This is the very best small feeder I know of.—ED.]

REFORMED SPELLING WITH A VENGEANCE.

There has been much in the journals lately on the subject of reformed spelling. I am sorry that Dr. Miller seems to be somewhat opposed to it, for, though it will be like parting from an old and esteemed friend for me to adopt any other method of spelling phthisic, beaux, etc., yet I believe it will save much wear and tear on the coming generation to leave out some of the superfluous letters. By the way, I should like to ask if Dr. Miller, Mr. A. I. Root, Mr. York, or any of the other brethren, have ever eaten any ghougphth-eightteeaux. If not, I should like to have the pleasure of cooking some for them if they will make us a visit.

MRS. R. C. AIKIN.

Loveland, Col., Nov. 23.

[Well, now, Mrs. Aikin, I did call upon you, but you did not give me even a taste of gough—shades of the reformed spellers! My, oh my! I can not pronounce it, much less spell it offhand. On paper it looks as though it might be something tremendous.—ED.]

PLAIN SECTIONS INDORSED.

Plain sections and fences are the thing, and will forge to the front. I produced as well-filled sections this year as possible, having several cases filled and capped to the wood of the sections. I raised my first lot of queens by the Doolittle method. They were all fine large ones.

I have 84 colonies at present, and look for better wintering than last year, and a better

honey crop also, though I did fairly well on sweet clover and aster last year, having harvested one ton from 57, spring count, some being mere nuclei from severe winter, and many having worthless queens, which I have learned to replace.

R. C. HUGENTBLER.

Miami, Ohio.

NIVER ON GLUED SECTIONS; HOW TO TEST THE STRENGTH OF SECTIONS.

A little matter in GLEANINGS (Holtermann's article, p. 924) attracted my attention. How is he going to put up four-piece sections with the foundation put on to the top piece before ramming them together? By the way, I had some experience with the one-piece stuck-together-without-glue section last fall, and my opinion is that I prefer a section to hold honey—not honey-to-hold-section affair. A thought struck me right here, how to test the strength of a section. I cut the comb out of one, tied a string through one corner, and hooked the spring balance through it; tied another string to a basket and through the opposite diagonal corner of the section, then put in coal until the weight pulled the section to pieces. That section was dovetailed at the corners only $1\frac{1}{4}$ inches wide, but it took $4\frac{1}{2}$ pounds of basket and coal to do the trick.

S. A. NIVER.

Groton, N. Y., Jan. 8.

MICE IN HIVES.

I got three hives of bees late in the fall, and there is something cutting the combs in small pieces. Can you tell me what it is, and a preventive for it? Could I rehive them this winter?

T. W. VAUGHAN.

Kittanning Point, Penn., Dec. 28, 1899.

[From what you say above I should be inclined to believe that mice were getting into your hives, for they do make sad havoc in the colonies. The entrance should be narrow enough to just admit bees; or if 2 inches deep, coarse wire cloth should be tacked over. Wire cloth should be just coarse enough to let bees pass through it, and yet keep out the "varmints."

The mice, being fond of the combs and honey, seem to take special delight in burrowing up into the packing and getting the benefit of the warmth of the clusters. Like some folks they like soft warm quarters with plenty to eat.—ED.]

LYE FOR CLEANING SEPARATORS.

Dr. Miller:—You made the statement in GLEANINGS some time ago that you were using lye to clean separators. Do you still use it? does it give satisfaction? or does it roughen or eat the wood? I want to use plain sections and fences; but cleaning the fences by hand is a serious matter. Do you think they can be properly cleaned by the lye plan?

Ono, Wis., Nov. 30.

W. H. YOUNG.

[Dr. Miller replies:]

I think just as much as ever of concentrated lye for cleaning T tins, and I think it would be excellent for tin separators, but I never tried cleaning wood separators with it. I tried

it for cleaning supers, but didn't like it. I am sure it would not do to clean fence separators with it, for they are put together with glue, and when you put them in the boiling lye they would be ruined. I have not had enough experience cleaning fences to find an easy way to clean them, but my former faith that they could be as easily cleaned as plain separators has all oozed away. [But those who have tried both *extensively* say they are easier.—ED.]

WHAT TO DO WITH CANDIED COMB HONEY.

I have some beeswax on hand, and I intended to get the wax from my 30 hives and ship all to you; but I ran against trouble. The combs, being old and dark-colored, don't sell well; so I can hardly sell it in the comb; and when I tried to get the honey out of the combs I struck another snag, and a serious one to me. It is this: About a quarter or more of all the cells are filled full, or nearly full, of candied honey. I have tried every plan I can think of, and so far I have failed to get the honey out. If you know of any way to get this honey out, please let me know.

Cross Keys, Ga.

JOHN BARFORD.

[The best use you can make of these combs filled with honey candied solid is to put them into the solar wax-extractor next summer. The honey and wax will both be reduced to the liquid form—the former being separated off in a cake by itself. While the honey is not of as good quality as that which has been taken with the centrifugal extractor, yet it will do very well. If there is another and better way of treating such combs I should be glad to be informed of it. Bees will sometimes take candied honey out of the combs and use it; but more often they will drop the granules on the bottom-board; and when warm weather sets in, these granules will be shoved out of the entrance. After the first rain these will be wet down, resulting in more or less robbing; so that I recommend that combs containing candied honey be treated as I have explained.—ED.]

A GOOD RECORD; OVER \$960 FROM ONE APIARY.

I started in the spring with 60 stands strong, and 20 weak. I increased to 150 stands. I have sold \$715 worth of extracted honey and 150 lbs. of wax. My 70 stands of bees at \$3.00 net brought \$210; 150 lbs. wax at 23 cts., \$34.50; extracted honey, \$715. Total, \$959.50. Have you a better report than this from 80 colonies?

THOS. M. SKELTON.

Fresno, Cal., Nov. 23.

COLOR OF HONEY-DEW FROM HICKORY.

What is the color and quality of honey-dew from hickory?

E. D. HOWELL.

New Hampton, N. Y.

[I can not be very positive, but my opinion is it is very dark in color and rank in flavor. In fact, that might be said of almost any honey-dew; but that from hickory is particularly bad.—ED.]

PLAIN SECTIONS AND BEEWAY SECTIONS COMPARED.

The fence and plain section please me very well. I had a few cases of sections with insets; and when these were filled the boxes looked well and the honey tempting; but when I went and got the plain boxes that were equally well filled with honey, and set them down beside them, I did not have any hesitation as to my choice, which is the plain-section honey-box.

Cuba, Kansas.

WM. H. EAGERTY.

TRANSFERRING BY THE HEDDON METHOD.

Mr. James Heddon says, regarding his method of transferring, that in 21 days he makes a second drive and cleans the hive of bees. If he puts the second drive with the first, won't they fight after so long a time?

Melvin Mills, N. H.

F. C. BURNHAM.

[It will be very seldom that bees will fight at the second drive. If they do, give them a little smoke and all will go well.—ED.]

CHUNK HONEY; INCREASING DEMAND FOR IT IN THE SOUTH.

You are aware of the fact that comb honey in tin cans is rapidly coming in demand everywhere, and especially so in the South. We have demonstrated that fact the past season, for our orders for honey from local dealers over the State are over five times as much for chunk honey as for one pound sections. We will run at least half of our bees this year for chunk honey.

O. P. HYDE.

Hutto, Tex., Jan. 1, 1900.

HONEY THREE MEALS A DAY AND BETWEEN MEALS.

I enjoyed the illustration of the "Cincinnati house-top apiary," page 678. It is neat and regular; also "pineapples," page 685. Speaking of honey for breakfast, page 726, I would say it is a very common custom here to eat honey three meals a day—at least among bee-keepers. At our home it is eaten at each meal, and between meals when we have it.

The last few numbers of GLEANINGS are simply fine—such good illustrations. I am glad your subscription is booming.

W. W. LAWRENCE.

Centreville, Tex., Dec. 8.

THE WIRE-CAGE METHOD OF INTRODUCING QUEENS.

In regard to the wire-cage plan of introducing queens, as referred to on page 857 as being a good and reasonably safe one, I heartily agree, yet I think I once lost a queen by that method. The queen had laid a number of eggs in the cells from which the young bees had emerged. When she was released she was accepted with gladness; but having occasion a few days afterward to open the hive I found queen-cells started from the patch of eggs laid under the wire cage, and the queen dead. Since then I close the wire cage, after the queen is released, and leave it so for a few days so they can not have access to the eggs.

J. W. SOUTHWOOD.

Monument City, Ind.

AN INTERESTING REPORT FROM BRITISH GUIANA, SOUTH AMERICA.

You may be glad to hear that I have extracted from my little apiary 300 lbs. of honey from 8 hives only, one alone giving me 48 lbs. net. That is for five months' work from the previous lot I extracted. We are the only ones in this colony having an apiary. This is my second year. I shall always make some sort of report for you. W. H. TERRIL.

Georgetown, British Guiana.

SEALED COVERS FOR WINTER.

Give me sealed wood covers for bees in preference to cloth or cushions; also have the bees face the south in preference to any other direction this side of the equator, because they will often make a fly in the afternoon if they face the sun, while if the sun shines on the back of the hive they will not fly. This is for winter. HERBERT L. MCLALLEN.

Trumansburg, N. Y., Nov. 4.

STUNG TO DEATH BY BEES.

[We copy the following from a Cleveland daily, under date of Sept. 27. The same incident was referred to in Pickings, on page 791, last year, but we have here a little more additional information:]

ALLIANCE, O., Sept. 26.—John Carson, a farmer, aged 65, of Newton Falls, was stung to death by bees. Carson desired to work in his apiary, and, to quiet the bees, burned sulphur. This only enraged the bees, however, and they swarmed over him, stinging him in hundreds of places. He made his way to the house, where he fell to the floor. Several hours later, he died.

[This man lost his life by not knowing enough to let bees alone when they should not be handled; and instead of using smoke to quiet his bees, as bee-keepers do the world over, he did something entirely unheard of. Who ever heard of burning sulphur to quiet bees? We are very sorry indeed to learn that anybody has lost his life in this way; but he certainly was entirely to blame in stirring up the bees at a time when they should have been let alone, and also in attempting to handle them when he did not even know any thing about the management of bees.—ED.]

WHAT TO DO WITH THE COMBS OF SEALED STORES OF A COLONY THAT HAS DIED.

One of my colonies was too weak to go into winter quarters before I was aware of it, and the cold snap, 10° below zero, we had about the holidays, killed all of them, and there is quite a lot of sealed honey in the brood-chamber—about 10 or 15 lbs. I closed the entrance so no robber bees could get in. What would you do with that hive? Would you get a colony of Italians and put in next spring, or what? E. S. KRIEBEL.

Reddick, Ill.

[I would close the entrance up in such a colony, after cleaning out all dead bees. Next spring give these combs to some colony needing stores; or if there is no colony that is short, reserve the hive and its combs for the first swarm that can be hived on its combs. Combs off from which the bees have died will be, as a general rule, unless badly smeared with dysentery-marks, just as good for a new colony as any.—ED.]



C. W., N. Y.—We made plain sections $4\frac{1}{4} \times 5 \times 1\frac{1}{4}$ all last season, but we did not catalog them, for the reason that the demand was comparatively limited. You will find them very highly spoken of, however, by two or three of the late correspondents of GLEANINGS. They have all the advantages you name, and may possibly displace the $3\frac{3}{8} \times 5$.

K. M., Ohio.—I know of no reason why bees can not be kept within the city limits; but to avoid any trouble the hives should be put in the back yard of the city lot; or if there is no such yard, on the roof of the building. You should arrange somehow to get the range of flight of the bees so that it will not interfere with the ordinary traffic of the streets.

W. J. M., Pa.—The bees which deserted their own hive and entered another were not robbers, as you suppose, but simply bees that had swarmed out. The bees of the hive entered regarded them as intruders, and fought them just as they would fight robbers. The occurrence is not unusual; but when it does happen, the bees fight very much as if it were a case of robbing. In this case the fighting was mostly on the side of the colony invaded, for the incomers would treat the others civilly enough if they could only gain admittance.

E. J. B., Can.—We could not very well refer you to the particular copy or copies of GLEANINGS giving the Elwood caged-queen plan to prevent swarming, without spending probably a day to look over our back volumes. This expense you would not care to assume, probably; but in our A B C of Bee Culture you will find this matter pretty well covered under the head of "Prevention of Swarming," and particularly under the heading "Prevention of Swarming by Caging or Removal of Queen." Under this heading you will find all the information you desire.

A. W. C., Mo.—There are several ways of rendering old black combs into wax for market. Perhaps the most convenient is the solar wax-extractor, which can be had of any of the dealers in supplies. Another and very common way is to put the combs in a cheese-cloth bag and then sink the bag into a wash-boiler of hot water. As the wax melts it will percolate through the cheese-cloth sacking, rise to the surface of the water, and can then be dipped off. The bag should be occasionally punched with a stick, and squeezed, to press out as much as possible of the wax that remains in the old comb. But there is no way of getting all the wax out of old combs except by the use of the wax-press. First render the combs in a solar wax-extractor, or by the other method described, after which, while hot, subject them to pressure in a wax-press. For directions for making a wax-press, see our A B C of Bee Culture.

C. B. P., Mich.—You can not very well winter bees under the schoolhouse, on account of too much heat and too much light. The room should be almost absolutely dark, and should have a temperature that does not vary very much above 50 nor below 40; 45 is a desirable point to hold it at. The noise of the children in the rooms above would not disturb the bees after the latter have become a little accustomed to it, as bees are wintered right along year after year in cellars under a floor frequented by romping children; but the steam-pipes and the large amount of light in the schoolhouse basement would be very objectionable. You might get along very well providing you could give the colonies access to the open air by means of entrance-ways just under the windows.

J. S. W., Ia.—I should hesitate to advise you to go to Colorado to keep bees, as the State now has all the bee-keepers it can support to any advantage. Only one-tenth of the whole area is under cultivation, and on only a part of that can bees be kept. Rocky Ford, however, is a good bee country, and you could possibly find a location. I would not advise you to move unless you think it is necessary for your health. There are a good many drawbacks in the State, and I would advise you to wait until you have read all the series of articles that I am to write for our journal. I hardly think it would pay you to move your bees, on account of freight. I would suggest that you do this: You and your boy go out to Colorado, hire out to some bee-keeper, or manage bees on shares for a season; leave your wife at home, and then after you have been there a summer, and know something of the conditions, you can make arrangements to move your whole family, and sell out if it should seem best. By this arrangement your son will have the benefit of the climate for one summer at least, and it may be enough to give him a start on the road to good health, even if you should decide that you had had enough of it in one season. Colorado isn't a good country for nervous troubles. In the regions of irrigation, lakes, and ditches, consumptives sometimes get worse instead of better, for there is a good deal of moisture in those vicinities. The best place for a consumptive in Colorado is out in the dry air away from irrigation. Such localities are practically in the desert, away from moisture as far as possible, and are decidedly lonely.

R. C., Ohio.—The ten-frame Dovetailed hive you will find is just the right dimensions without the follower to accommodate ten frames. In a few cases the bees bulge the outside surfaces of the combs in the two outside frames; but they would do that with the eight-frame hive with the follower. In either case, after all the frames are in the hive the whole set must be crowded close together and then spaced to the center of the hive so that the space between the outside surfaces of the combs will be equal. If you do this in practice you will not experience the trouble you fear. The new hive-follower for 1900 will be very much better than that for 1899, and will carry out in theory as well as practice the very object we

desire to secure in facilitating the removal of the frames; but even then it is an extra expense, and about as difficult to remove as any one frame. To take out the first frame, shove the whole set over as far as they will go to one side. Then split the set at a point next to the one you desire to take out, separating the two parts as far as possible. Then shove the desired frame into the middle of the space thus formed, and you will find that it will come out without difficulty. With regard to the advisability of using single-walled or chaff hives for wintering purposes for Southern Ohio, I should be inclined to think that Chas. F. Muth was right; but a short and very cold spell down to 30 degrees below zero is not nearly so destructive to bees' life as long-continued chilly weather in March and April. If in your locality the bees can fly almost any day in April—that is to say, if they can gather pollen during the fore part of that month and the latter part of March, then we should say that the chaff hive would be a superfluous expense. We have not kept data in regard to morning temperatures in our locality for the last 30 days. We have had very variable weather, ranging from 10 above to 50 or 60 above. From before Christmas till four or five days after Jan. 1st the temperature ranged from 10 degrees with high winds. This would be worse than 10 or 20 below without wind. Possibly by applying to the Government Bureau you could get ranges of temperature for any date for the two localities. Referring to a cheap binder for GLEANINGS, I would say that we have something that we could supply you for 15 cts., postpaid, that is very neat and pretty. It has been advertised but very little, but it is not as handy nor as good, of course, as our more expensive binders.



Igremento - Presto - Change!.

RAMBLER BECOMES A MIND-READER.
(A dream of our artist.)



EXTREMES OF TEMPERATURE FOR WINTERING.

For the last two or three weeks we have been having very open weather. The temperature here has been ranging from 50 almost up to 70. I fear these very warm spells for outdoor bees, almost as much as I fear the very cold ones. In the case of the former, the bees get started in brood-rearing; and *then*, when the opposite condition comes on, many times bees, in their efforts to save the brood, are chilled to death, to say nothing of the wasted energy and wasted brood. A moderate, steady cold, is much more conducive to successful wintering, both for outdoor and indoor bees, than great extremes.

Later.—The cold wave has already come.

DR. HOWARD'S REPORT ON THE NEW YORK BEE DISEASE, OR BLACK BROOD.

I HAVE just received the manuscript detailing in full Bacteriologist Howard's investigations concerning that new malady that has been afflicting the bee-keepers of Eastern New York. The doctor has made over 1000 microscopic examinations, besides doing a great deal of other work connected with scientific research of this kind.

I have hurriedly gone over the manuscript, and am surprised and pleased at the thoroughness with which he has apparently gone through with the work. He has made eight different pen-drawings direct from the microscope, all of which will be engraved, and the whole will be presented to our readers, probably in our issue for Feb. 15.

To relieve the suspense of some, I will simply say in advance that the doctor (as was stated in the preliminary report) finds this to be an entirely new disease, and quite distinct from foul brood—so different is it from any thing before discovered that he has named it the New York bee disease, or black brood. Further than this it will not be necessary to go into details, because the doctor will be able to speak for himself as soon as the engravings are completed.

THE REFORMED SPELLING ONCE MORE.

NEGATIVE votes against the shorter spelling are coming in pellmell. At the present rate they will bury the affirmative votes for ever out of sight. Not wishing to take any more space on this subject, I would simply say that, for the present, we shall not adopt the proposed shorter spellings. We have for several years used, without offense to any one, words such as *catalog* for *catalogue*; *program* for *programme*, etc. There are several other shorter forms, but they have been incorporated so slowly that no one has noticed them; and whatever change we make in the future will be made on the same plan.

But in giving up for the present the proposed spellings, I have a feeling that, if all reforms were treated in a like manner, very little would be accomplished from century to century. We are still in favor of the shorter spelling, but do not wish to go against the expressed wishes of our subscribers.

A FUTURE FOR CANDIED HONEY.

It is evident that there will be more of an effort in the future to sell extracted honey in the candied form. C. F. Muth, according to the *American Bee Journal*, established a large trade in granulated honey. In more recent years, R. C. Aikin has demonstrated that large quantities of it can be sold in this way without even the assistance of the city honey-merchant or middleman. The only thing necessary is to educate *consumers* to the fact that candied honey is really and truly honey—just as much so as if it were still in the comb. A bee-keeper who buys the granulated article never objects because it is candied; and for his own use he would just as soon have it as the liquid, for he knows that it can be brought to the latter condition very easily, and that, while it is in the solid, it can be handled and shipped without danger and without leakage. When we get consumers educated to call for candied honey, or, rather, to accept it as pure bees' honey, then the next thing we shall want to know is how to make extracted honey candy quickly so that it may be made available for the market as soon as possible. There is no trouble about getting honey to candy in Colorado, for it candies there almost before the producers can get it into small vessels.

THE FOUL-BROOD LAW AT THE MICHIGAN CONVENTION.

THE bill that was introduced into the Michigan Legislature a year ago, providing for a foul-brood inspector, failed to pass and become a law because of apathy and lack of support on the part of bee-keepers. When such a bill is introduced in the legislature of any State, and the secretary of the association, or any other person who is interested in its passage, notifies the bee-keepers, or they see notice in the bee-journals, it should be their first duty to write to their representative and senator, urging the importance of the measure, and impressing upon them the necessity of its passage. By flooding the law-makers with personal letters, more can be accomplished than in any other way; and if bee-keepers do not manifest enough interest in a measure of this kind, which is of vital importance to them, you can not blame the legislators for pigeonholing the bill, and giving their attention to something that is more actively supported. We American people need to learn that, after we have gone to the polls and elected those who are to represent us in the halls of Congress and legislatures, and other offices of trust, our duty is not done. These officers are elected as our servants, and they are anxious to know what we want, and we should be free to write them, especially when a matter is up for discussion in which we have a vital interest. When foul

brood is cropping out in different parts of the country, as it seems to be doing of late, it is of the utmost importance that we have necessary laws providing for State inspectors to look after the disease, and hold it in check. Even if foul brood has not gotten a start in your State so far as you know, it would be a wise move to secure such a law at the first opportunity, and get ready for the disease when it does come. If it never comes, no harm has been done; but if it does come, and you are not ready for it, it is liable to do a great deal of harm before you can get the necessary laws in motion that will stamp the disease out, or at least hold it in check. Wisconsin has a most admirable foul-brood law; and the one that it was proposed to pass in Michigan, and which they hope to pass at the next session of the legislature, is modeled after the Wisconsin law. Copies of it may be obtained by those interested by addressing J. M. Rankin, Michigan Agricultural College, Lansing, or N. E. France, Platteville, Wisconsin.

BLACK BROOD AND THE SYMPTOMS.

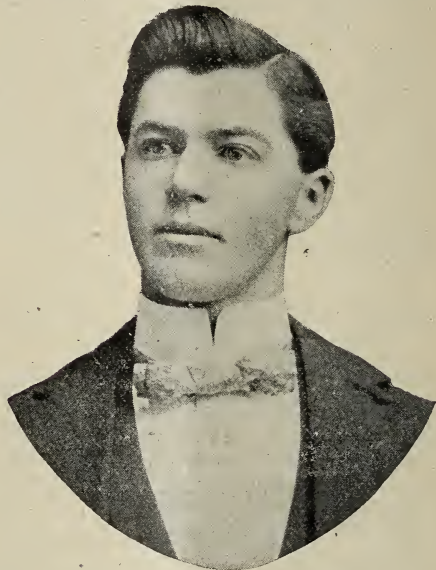
I HAD intended for this issue to give a report of the proceedings of the New York State Association of Bee-keepers' Societies, held in Geneva, Jan. 10; but the greater part of the discussions related to the new bee disease or malady that is now raging in Eastern New York; and although I took quite extended notes, yet, after having received the report from Dr. W. R. Howard, of his laboratory work, which report seems to cover much of the Geneva discussion, I have decided to omit that part of my report, because Dr. Howard takes up all of these matters from the standpoint of the scientist who weighs carefully all the evidence, and then, aided by his laboratory and his microscope, gives his conclusions. I will, however, give only a description of black brood as was given by Inspector West, for that may enable others to recognize the same trouble that may possibly be in their vicinity. Here are a few of the symptoms that Mr. West gave:

Right in the center of a larva three or four days old, as it lies curled up in the bottom of the cell, may be seen a very small yellow spot, about like the head of a brass pin. This spot appears to be right in the center of the coil, for it will be remembered that a three-days-old larva lies curled up in a circle; and it is in the middle of this circle, or what may be considered the inside of the body, that the yellow spot is found. But the larva is still alive, and will continue to grow; but the spot grows larger until the larva begins to assume the color of a dark-yellow or brown, when it dies. Sometimes the dead matter looks almost like white glue; but when the larva dies after it is capped over, the matter will have a coffee color. It ropes very slightly, and is of a watery consistency; but before it will rope at all it has to be of the right age. When it is remembered that it is only occasionally that this diseased matter will rope, and that only very slightly, and that foul brood *invariably* does so, the dead matter stringing out sometimes two or three inches, it will be seen there is quite a distinct difference.

At its first appearance black brood has a sort of sour smell, while foul brood has a foul, or sickening odor like that of a glue-pot.

CARL F. BUCK, AUGUSTA, KANSAS.

THE young man whose face is shown below, who, although only 21 years of age, is bound to make his mark in bee-keeping so far as it relates to his own State, Kansas. Possessed with a good education, gifted with a good deal



of push and ambition, he is already pretty extensively engaged in bee-keeping; and that you may know he means business, I will state that he has bought a carload of bee-keepers' supplies, and paid for them. While he is fully able to hold his own, he is backed by considerable property and by a step-father who is one of the most prominent farmers in Butler Co., Kansas. We are glad, therefore, to introduce him to the bee-keepers of the West, and especially to those of Kansas.

THE HOLLOW BATTEN ON HIVE-COVERS; WHO ORIGINATED IT?

IN our issue for Nov. 15, 1899, we illustrated an improved form of the Higginsville cover, or what we called our Excelsior, to distinguish it from the Danzenbaker and other forms of covers. The improvement consisted in the use of a hollow batten to cover the projecting shoulders of the two side or gable boards and the crack formed by them. There was no invention in this, and we did not claim it as such; for the scheme of a hollow batten as a ridge piece on box cars and in building construction is very old. We had not seen it in connection with hive parts, and when we illustrated it we supposed that we were the first to so use it. But after it appeared in GLEANINGS, Mr. Danzenbaker called our attention to the fact that he had used a hollow metal batten, embodying the same principle in his covers two

years before, and in proof referred us to his book, "Facts about Bees;" and now in the January *Progressive*, this same cover, the one we illustrated in our Nov. 15th issue, is shown; and of it Mr. Leahy says "we were the first to put it on the market years ago;" but from a private letter I take it that this does not refer to the hollow batten which he says they first made in December, 1898; in proof of which he refers to several parties, among whom may be named W. J. Rouse. We have no desire to deprive the Leahy Co., or any one else, of credit rightly their due; and if the Higginsville people had described or illustrated this cover, at the time they adopted it in December, 1898, we should have given due acknowledgment. But perhaps then we should have had to square up with Mr. Danzenbaker, whose claim for something the same in metal goes back earlier.

THE COLORADO STATE BEE-KEEPERS' CONVENTION, CONTINUED; ALFALFA AS A HONEY-PLANT.

LET'S see. We left off where the bee-keepers of Colorado were discussing the effect of overstocking in many localities. Following this there was a good deal said regarding alfalfa; and in the course of the discussion it developed that this plant, by reason of irrigation, although one of the most certain and reliable sources of honey that there is in the world, does not invariably yield; but sweet clover had never been known to fail; and while it is by no means an important honey-plant in the State, yet coming as it did in connection with and following alfalfa, it went a long way toward piecing out the honey-flow.

And speaking of sweet clover, that reminds me that, while in the State, after tasting many samples, I got so I could tell when there was a little of it in alfalfa honey. The flavor of a little sweet clover in alfalfa is not unlike that of the old hoarhound candy that we used to eat in our childhood days, and is very pleasant. After eating pure alfalfa, one finds it a pleasure to change over to alfalfa and sweet clover mixed, and *vice versa*; but, all things considered, I am of the opinion that pure alfalfa will wear longer than that which has a little of the pleasant flavor of the sweet clover.

Within seven miles of the bees of the Rauchs brothers there were something like 2000 colonies, and this locality as a whole was considered exceptionally good for alfalfa and sweet clover combined.

Formerly the alfalfa yielded more honey than now. One reason for this was because the ranchers cut their alfalfa earlier, just at a time when the flowers are at their very best. Still another reason, there are more bees to a given acreage of the plants than in former days. Mr. Adams estimated that there are ten bees now where there was one then. Dairy interests had so increased that it made it necessary to cut alfalfa earlier than usual; but grasshoppers, according to Mr. Porter, were very destructive to alfalfa. Take away these pests, and they could double the number of colonies in a locality. Quite a number assented to this statement.

In the general discussion that followed, it developed that grasshoppers would sometimes clean every thing up. Even corn four feet high has been eaten down clear to the roots; then when alfalfa was in bloom the hoppers had a fashion of eating the bloom itself, letting the rest go.

Prof. C. P. Gillette, entomologist for the Colorado Experiment Station, whose picture is here given, was of the opinion that the bee-



PROF. C. P. GILLETTE.

keepers of the convention were overestimating the damage done by these insect enemies. Their destructive work could be greatly reduced by plowing the eggs under the sod at certain seasons of the year; but when the pests are at work they can be destroyed by what is known as "bran mash" distributed along the outside of the field. The question was asked how to make the mash. The professor said that the formula usually given was one part of Paris green to six of good sharp bran and some cheap molasses. Some thought this too strong, and that less of the Paris green would do just as well. Sometimes a little white arsenic to two pounds of mash with molasses was used.

And speaking of Prof. Gillette, he is one of the most approachable and genial of men one often meets. He takes an unusual interest in bees, and at the experiment station at Fort Collins has conducted a variety of experiments in apiculture, the results of which he has given at the regular meetings of the Colorado State Convention. It is with no little pleasure that I introduce one of whom I feel we shall hear more of in the future.

SEPARATORS VS. NO SEPARATORS FOR COLORADO.

On the afternoon of the second day a very spirited discussion arose over whether it was necessary or advisable to use separators in the production of comb honey. J. E. Lyon took

very decided grounds against them. He had, he said, produced comb honey extensively without them, and he thought his honey would compare favorably with any separated honey produced. Separators were an expense and a nuisance—a nuisance, because they invited burr-comb attachments to the comb surfaces, and because they retarded the prompt entering of the bees into the supers. If he were to use separators at all, he would favor, he thought, slatted separators on the plan of the fence. He regarded free communication clear through the super very important, and a super *without* separators he believed was far superior to any thing *with* them. Yes, sir; he would challenge any man to produce better honey with separators than he could without. Mr Herman Rauchfuss very promptly rose to his feet, and accepted the challenge then and there, and then the fun began. While one or two favored this position of Mr. Lyon, the majority, including the Rauchfuss brothers and President Aiken, took decidedly the opposite view. Sec Rauchfuss read a letter from a prominent commission house, urging that bee-keepers use separators, as non-separated honey was often unsalable, and brought a lower price. "Shots" were fired back and forth in lively succession, greatly to the enlightenment of the convention and the merriment of the members. Some one, I do not recall who, said it was a common practice in his vicinity to use one or two separators in a case; that this was a saving in expense, and the bees were more ready to enter the supers. This invited a regular fusilade from the separator men, who were strongly in the majority. When the discussion had all but closed, with the non-separator fellows all but squelched, President Aiken, evidently to complete the process of "squelching," arose and said there was a time when he had advocated before that association the use of no separators in the production of comb honey; but he felt that he had made a serious mistake; and if bee-keepers would forgive him he would *never do so again*. He had seen some of the poor non-separated honey on the market, and felt that such goods were a poor advertisement for the Colorado bee-keepers. He now used and recommended *all* to use separators. While he admitted that Mr. Lyon's honey *might* be first-class, yet the majority of bee-keepers would do far better to use separators, in his estimation; and then, turning to Mr. Lyon, he didn't believe his (Lyon's) honey would be classed in the same grade with a first-class article produced with separators. Mr. Lyon, in response, grinned a smile that indicated he was not squelched, but of the "same opinion still."

W. L. COGGSHALL AND HIS LIGHTNING OPERATOR.

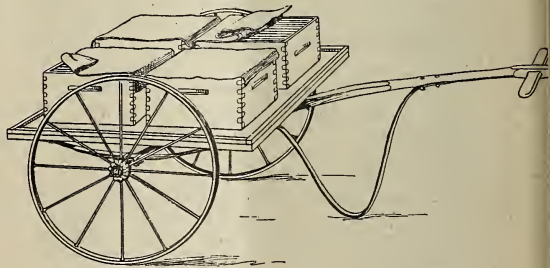
W. L. Coggsall owns and operates—well, he does not know exactly how many, but somewhere from 1100 to 1200 colonies. These are distributed among some ten different yards, the furthest one being something like 40 miles from the home apiary. They are scattered among the hills between lakes Cayuga and

Skaneateles, and hardly a better location for such extensive bee-keeping could be found in the whole State. His brother, David C., formerly his partner in business, now owns something like 600 colonies, and the two have covered almost all the territory between the two lakes with apiaries that range from two to three miles apart.



W. L. COGGSHALL.

There is probably no man in the world who secures as large a number of pounds of honey per colony, with as little labor as W. L. Coggsall. Indeed, his record, and that of his helpers in extracting, is something phenomenal. An extracting-house, extractor, and all other appurtenances, are stationed at each yard; and it is the custom for Mr. Coggsall to take with him two or three men, also a load of kegs, barrels, and half-barrels. Arriving at the yard, they don their armor-proof bee-



COGGSHALL'S EXTRACTING HAND-CART.

suits, because no ordinary sting proof clothing would answer. They then proceed to extract, not after the orthodox fashion, but in a manner that would make the hair of an average bee-keeper stand on end. The hives are ripped open—yes, even kicked open, sometimes, if a kick will do it more quickly—smoke is

driven down between the frames, combs are jerked out, and with a peculiar nervous trembling motion, which they have acquired, they will shake the bees almost entirely off. What few may remain are cleaned off the combs with one or two sweeps of a long whisk-broom which the apiarist has tied to his person. The air may be filled with mad stinging bers, but that makes no difference; the work goes on just the same. The combs, as fast as cleaned, are set down in regular hive-supers placed on a hand-cart. As soon as four supers are filled with combs, one of the boys draws the hand-cart to the extracting-house where the combs are uncapped and extracted at a speed that defies competition. One of Mr. Cogshall's "lightning operators" and two boys actually took from the hives one afternoon, 1400 lbs. of honey in an hour and a quarter, or at the rate of over 1100 lbs. an hour. This included taking combs out of the hive, brushing bees off, uncapping, extracting, putting the honey into kegs, and replacing the combs. This record is the more remarkable from the fact that a non-reversible extractor was used, and that the "operator" is of light build, and the boys both under 16. Some of the other records are, 900 lbs. in one hour for two men; and 2500 lbs. in a day for one operator and two boys.

That Mr. Cogshall and his brother have made money with their bees is evidenced from the fact that they live in two very fine modern residences, finished off inside with hard wood, heated by furnaces and equipped with modern plumbing; modern barns and modern machinery of every kind are found about their premises. And besides their beautiful large farms which they operate between times, I understand they have some snug sums of money laid up for a rainy day in the way of life insurance and substantial bank accounts.

Mr. Cogshall places the locality first, the man second, hives last. That he thoroughly believes in this is attested by the fact that he has one of the finest locations in the world, right in the heart of the great buckwheat country, so famous for its immense crops, and by the further fact that he himself is an alert, keen business man, ever active, always studying the shortest cuts, and ever watchful of the latest methods. His hives—well, the less said about them the better. They are any thing and every thing, but generally of the eight-frame Langstroth type—such hives as he has been able to buy up from his less successful neighbors who tried their hand at keeping bees and did not make them pay. He will take these same bees and the same hives in the same location, and make them return to him a big revenue, thus proving that there is something besides locality in getting honey.

Mr. Cogshall is, in some ways, the most remarkable bee-keeper in the United States. While the majority of us would feel that we could not afford to use the hives and methods (the kicking and the stinging) employed by him, yet there is no denying the fact that he produces great results in spite of the stings, and in spite of robbing and the home-made equipments that he makes for himself.



He brought me up also out of a horrible pit, out of the miry clay, and set my feet upon a rock, and established my going.—PSALM 102:2.

While I write this 20th day of January, in Medina Co. at least it is very hard getting around anywhere unless one keeps on the stone pavement or on the limestone roads. The weather is very mild for the time of year. In fact, there has not been a frost, or at least none to mention, for more than a week; and if you get off the walks into the Medina clay, your feet will slip around in every direction so you can hardly stand up, let alone making any headway, *especially* if you attempt to cross a plowed field. You may wear rubbers, it is true, but your rubbers will stick tighter in the miry clay than they will to your feet; and if you undertake to do any kind of work without a stone pavement to step on, or a plank or board, you will likely get your feet wet, catch cold, and be very much disgusted with outdoor work in the winter time, with nothing to *stand* on. At such a time you can appreciate, as perhaps never before, a good solid stone walk. Gravel does very well, but it is apt to be more or less yielding. Bricks are better than nothing at all, but they will slip out of place, and get more or less edgewise unless they have a good foundation underneath. There is nothing like *solid rock*. Sometimes one of the underdrains gets stopped up—possibly the cellar drain—and you are actually obliged to get into the mud and water, and work after a fashion. Oh how good it seems after you get the thing finished, and can pull your rubbers out of the mud, scrape off the clay—better still wash them off clean—and get the solid rock once more under your feet! I am inclined to think David also had some experiences that he remembered, when he spoke in our text about "the miry clay."

Our pastor has just said he wants me to give a talk of six minutes to-morrow evening at our church. The subject is, what Christianity has done for me. I expect my reply to be the text at the head of this chapter. Well do I remember the miry clay of sin out of which the dear Savior lifted me at the time in my life when I promised to give up all and follow him. I think I was between 30 and 40 years of age. I remember distinctly that, during the early portion of my life, I was a good deal worried because the world did not give me the credit I thought I ought to have. I thought I did not get my just dues, and I was an ardent believer in what was then termed "blowing one's own horn." As I look back I am ashamed to think how persistently I kept tooting my little horn, in season and out of season. One of the first things that called my attention to the teachings of Christ Jesus was a text that has been a great favorite of mine all through my Christian life: "Blessed are ye when men shall revile you, and persecute you, and say all manner of evil against you

falsely, for my sake." Then there is another that went along with it: "Love your enemies; do good to them that hate you." I remember one day when I was a good deal stirred up because somebody in a business deal had accused me of something of which I was entirely innocent. I wanted to teach him good manners, and fight it out; but the little text came up before me, "But I say unto you, Love your enemies; do good to them that hate you; bless them that curse you, and pray for them which despitefully use you." An accident held the text up before me. I was repairing a piece of jewelry, and, strangely enough, this text was set in the jewel. As I held it up before my eye the words seemed to be written across the sky. Something led me to ponder on them. Said I to myself, "What strange words are these!" and I remember telling somebody afterward that these words must be divine, not human. From this incident I was led to hunt them up in the unused Bible at home. Some of you may remember how it turned out. In studying that perfect life that is revealed in the Scriptures, I lost sight of A. I. Root, in my reverence and admiration for the Man who is both human and divine—the Lamb of God that taketh away the sin of the world. I got over the idea that the world was not giving me a fair chance, and in a very little time things had changed around so that it seemed to me I was getting a great deal of credit for only a little self-sacrifice. The world, which I had before regarded with suspicion, seemed far kinder to me than I deserved. A few days ago I was talking to some young friends—some smart young business men—in regard to being truthful in *all* our statements, especially in print, of being truthful, not only in *letter* but in *spirit*, in choosing words that would convey just the *exact* truth, being very careful not to use any form of expression that might lead anybody to get an exaggerated view, though the words used are literally true. My companions laughed at me a little because I was so tenacious on the point of not *overstating*. One of them smilingly remarked that everybody knew I was *built* that way. I replied, "No, no, boys, I am *not* built that way. I am not moderate and truthful in my statements because it is natural for me to be so. I can not think it possible that any one of you finds it is as hard work to keep clear inside the bounds of truth and honesty as I do." And, dear friends, I think so still. With my peculiar temperament, with my hopefulness and enthusiasm, it is the most natural thing in the world for me to exaggerate. If I have a reputation for honesty, it is the result of hard fights in that direction. And there is one queer thing in this connection that I like to speak of. The world at large has always given me more credit in this direction than I deserve. I have put down self, and held back inclination. It is true, that, when I have done a very little in this line, very unexpectedly to me I have received even more credit than I deserve; and this is true, mind you, in a thousand different ways. I did not start out to make a good record in order that I might gain money or make a rep-

utation. I did it because I had my eye on Christ Jesus, and I tried to be right in his sight; and he in his loving kindness has rewarded me when I least expected it. Truly he has brought me out of the miry clay, and set my feet upon a rock, and established my goings; and what little I have accomplished has been for his dear name's sake, and not for the applause of the world. Again and again I have been reminded of the concluding words of that wonderful 25th chapter of Matthew, "Lord, when saw we thee a hungered, and fed thee? or thirsty, and gave thee drink?" You see, these persons had forgotten all about it. They did not seem to be aware they had done any thing. But the king said, "Come, ye blessed of my Father, inherit the kingdom prepared for you from the foundation of the world."

In my visits to the jail, I have almost invariably found the criminals complaining that they were the victims of spite or prejudice; that the man who is *really* guilty had slipped out and left them to suffer; and I believe this is mostly the state of heart, the world over, of criminals. *They* are never at fault—it is always *circumstances*. Now note the contrast. With the true Christian it is almost always the other way. He has had a better time and better treatment than he had any right to expect. Mankind are, as a rule, fair and honorable. They have given him good measure. God, too, has been liberal and kind, and given him good measure, full to overflowing. His heart goes out in thanksgiving, not only to God, but to all those around him. From the standpoint that the world takes, everybody is always ready to give a man a kick who is going down hill. But this is not Bible teaching at all. The Bible says those who are faithful in few things shall be made rulers over many things. Of course, the Scriptures demand that a man be honest and true. He can not expect to stand on the solid rock, nor receive any of these benefits I have been speaking of, until he loses sight of self and selfish feelings. When he tries to make his record clear before God, then the world is glad to help him and trust him. You know what the Bible says about this: "When a man's ways please the Lord, he maketh even his enemies to be at peace with him." Oh how many times I have seen this very thing verified! We can not be at peace with *everybody*. The faithful follower of Christ Jesus must resent and rebuke wrong; he must awaken the wrath of the evil-disposed; but these very men, when they find he is on the solid rock of Christ Jesus, will honor and respect him, and think more of him in the end, for having insisted on that which is right and honest and pure, than if he had let them go unrebuked when it was his *business* to call them to a halt.

Our pastor, in a recent sermon, said there was a great underlying truth that was too much out of sight, involved when the Savior spoke of loving our enemies. We should love our enemies because they tell us our faults, while our friends would never think of doing it. They, of course, may exaggerate; but every Christian man should carefully consider

whole day on this clover, and it is the best hay I ever fed, almost entirely free from dust, nearly as green in color as the day it was cut, and the stems are so fine and branchy that there is no refuse left. Every stem is eaten. E. F.

A great many are all the while asking if alsike, red clover, etc., will succeed if sown in the fall. I have always discouraged such experiments as being almost sure to fail. The above valuable report indicates, however, that alsike medium red, as well as crimson clover, may all be sown in July, and perhaps in many localities in August, with a fair chance of getting a good stand.

PLANT-GROWTH.

I am still studying plant-growth. Almost every plant that I have tried in pots puts out these same white fibrous roots covered with tiny hairlike fibrous "feelers," I feel like calling them, pushing out in every direction for food and moisture. The tiny seed sends out these same kinds of roots, also the cutting; and I have just succeeded in getting roots from a piece of a coleus leaf. By the use of the pots, commencing with the smallest thumb-pot, and then increasing in size gradually, we can see this root growth from its start. When the plant is in full vigor, and the soil just suits it, the temperature and moisture just right, these roots push out with wonderful rapidity. I have seen them run clear around the pot, not only once but twice, when it seemed as if it could not have been more than two days since I examined them. In the forcing-bed, where we keep a temperature of between 70 and 80, with the air full of moisture, these roots push out into the open air, and crawl over the sides of the pot, so you can almost see them move; and when this root growth is rampant, then the plant is at its best. The lady florist at the Wisconsin institute suggested an idea that is to me of exceeding value, and I am sure she is right. She said if you put your plant into a pot that is too large, the soil not permeated by the roots is apt to become sour, especially under the influence of too much moisture and high temperature.* Now, if the pot is small

* This souring of the soil, of course, takes place only where plants are kept indoors or in a greenhouse. Where earth is out in the open air, nature looks out for keeping it sweet. Now, if you have a sick plant that stands still, and does not grow, first remove the pot and wash it thoroughly; then dip it in boiling water to remove all germs of disease. Now shake most of the dirt off the roots of the plant and put it into the smallest pot possible; then pack it firmly with good fresh soil. We have the best success with jadoo and sand of any thing we ever tried. Now dip the whole thing in soft warm water, then place it in some place where the temperature is even, and do not water it any more until the plant starts to grow and needs water. If there is any such thing as revivifying it, this treatment will start the roots I have been speaking of. Do not be afraid of hurting it by taking it out of the pot every day to see how it progresses. Letting in some air will do it good. If you do not know how to get a plant out of a pot, you must learn how. Put your fingers around the stem, up against the soil, so as to hold it. Now invert it and strike the edge of the pot on something solid, say on the edge of a stone crock or the metal of your spade. If it does not start readily, turn the pot around and strike it first on one side and then on the other; then look out for the little roots. When you see just one white root coming out between the pot and the soil, your plant is on the road to health. Do not water any more until the soil becomes quite dry, and then give it another soaking.

enough so the roots can go all through it, these little roots can keep it from spoiling, and purify it and make it sweet. Now, please notice in bee culture we put our empty combs for safe keeping in with the bees. If the cluster of bees is large enough they will not only keep every thing pure and sweet, but they will cleanse old moldy combs, utilizing every bit that is good, and carrying out the bad. I have told you in the A B C book how it seems almost miraculous the way in which they will restore and renovate an old moldy comb in just a few hours. Well, plant life is akin to insect life; and finally the life of the living animal is along in the same line. When any wound or disease attacks the living tissue, nature, by a simple process, builds up anew, not only skin, but even muscle and bone; rejects decay and disease, and keeps out mortification, etc.

I have been more than ever impressed with the fact that plants want air as well as moisture. My potting soil is jadoo, or jadoo and sand. For small pots we put in the pots a little sphagnum moss. Now, the hole in the bottom of the pot must be kept open; and if the pots are plunged in the beds in the greenhouse up to their rims, be sure this drainage-hole does not get stopped up. When every thing is right, these little white roots will go all through the sphagnum moss, as well as around the sides of the pot. Then they will crawl out of the hole for drainage. It makes me think of a lot of chickens pushing their explorations over into their neighbors' premises for "something good." I believe farm crops often suffer, especially during a wet time, from a lack of air for these little feeding-roots. How great is the importance, then, of thorough underdraining!

My little salvia that grew in a thumb-pot with perhaps a teaspoonful of jadoo and as much more of sand, is in the same little pot still, and is budded to blossom. The pot is just filled with a mass of roots, and I have been keeping it there to see how large a plant can be grown in a small amount of soil, if the air and moisture were kept just right. I expect to give you a picture of these in our next issue.

When I gave a picture of my little greenhouse in our issue for Jan. 1, I did not mean to recommend it for large growers who have houses 200 or 300 feet long. One of our most skillful growers of Grand Rapids lettuce has offered a very pleasant criticism, which will appear in our next issue; and he also suggests quite a new departure in the way of greenhouse-building for Grand Rapids lettuce, and, in fact, for almost any other purpose in northern regions where snow and frost prevail.

Miscellaneous Questions.

I have been told that if you take five drops of chloroform on sugar, swallowed before it evaporates, it is a sure cure for sea-sickness.

If trees are whitewashed with lime and copperas, mice will not eat the bark off them.

It is said that if you put fresh pine sawdust in hens' nests, lice will not stay on them. R. HISLOP.

Strasburg, Ont., Dec. 20.

Chloroform administered as above might prevent sea-sickness, although I doubt it somewhat. A good article of extract of Jamaica ginger is the best thing I know of for seasickness, and nausea from other causes. Several small doses, taken as often as the nausea returns, have often banished it entirely.

Various substances put on with whitewash will keep off mice; and if you use a whitewash of Portland cement it will probably keep off borers also. I do not think that the addition of copperas would harm the trees; but a great many things have been recommended and tried that have killed the trees, so you want to look out. Our experiment stations are making some thorough tests in this matter. Better follow their advice. I think very likely fresh pine sawdust would have the effect you mention. Perhaps our poultrymen can tell us more about it.

Advertiser's Department of Short Write-ups.

THE LAND OF BREAD AND BUTTER

is the title of a new illustrated pamphlet just issued by the Chicago, Milwaukee & St. Paul Railway, relating more especially to the land along the new line it is now building through Bon Homme and Charles Mix Counties in South Dakota. It will be found very interesting reading. A copy will be mailed free on receipt of 2-cent stamp for postage. Address Geo. H. Heafford, General Passenger Agent, Chicago, Ill.

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J. W. Bittenbender, Knoxville, Iowa.

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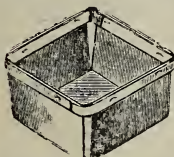
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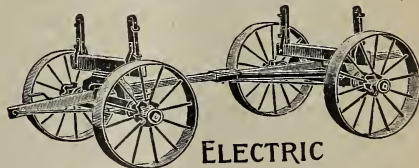
Root's Goods for California.

We have just received a large carload of sections, extractors, smokers, veils, etc., direct from the factory, and are prepared to supply bee-keepers with the same promptly. Do not send a long distance and pay high freights. Write for our prices.

M. R. MADARY, - Fresno, California.

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In writing to advertisers, mention Gleanings.



CATALOG FOR 1900.

As soon as this issue of GLEANINGS is off the press we begin printing catalogs, and expect to have some ready for distribution before the 15th. We have wrappers all addressed, and catalogs will be inclosed in them, and mailed just as fast as we can make up the catalogs. If you get tired waiting for yours to come, send a request on a postal and it will be mailed. If you get an extra one, hand it to some one who would be interested. We hope to print and distribute over 100,000 during the month of February.

OHIO MAPLE SYRUP.

Do you know that Ohio produces the finest maple syrup to be had anywhere? Do you know that, according to the pure-food laws of this State, every gallon put up here must have the name of the producer on the label, and there is a heavy fine for adulteration? The result is that Ohio maple syrup can be depended on every time. Do you want something fine for buckwheat cakes this winter? something that will please all of your family? then order some of our maple syrup at once. In one-gallon cans, \$1.00; same in lots of five one-gal. cans at 90 cts. per gallon; ten one-gal. cans at 85 cts. per gal.

BEESWAX WANTED.

We will pay from this date, till further notice, 26 cents cash, 28 cents in trade, for average wax delivered here, and from 1 to 2 cents extra for choice to fancy yellow. We are making up foundation now at the rate of one to two tons a week, and it takes this amount of wax to keep us going. If you have any to spare, send it on, and be sure to place your name and address in or on the shipment, so that we can identify it. Also write to us, stating gross and net weight of shipment, so that we may be able to determine whether any has been lost on the way. If shipped in bags they should be very strong, and double as well. If shipped in barrels or boxes, be sure they are tight and securely nailed.

Special Notices by A. I. Root.

THE GIANT GIBBALTER ONION.

By an omission this was not put among the novelties. Price of seed, 15c per ounce; \$2.00 per lb.

WANTED, CRIMSON CLOVER, JAPANESE BUCKWHEAT, AND HULLED SWEET CLOVER.

If you have any of the above for sale, mail us samples and tell us what price you want for it.

WISCONSIN FARMERS' INSTITUTES.

Ever since my visit at Madison some years ago, at the time of the Farmers' State Institute, I have looked over with special interest the annual reports that somebody has been so kind as to send me. For 1899 it is a neatly bound book of 265 pages, brimful of half-tones from real life. When you are reading the reports of the proceedings you have the pleasure of seeing the speaker's face in nice half-tone right at the head of the chapter. Then you have half-tones of the farmers' homes, different crops, buildings, etc.; and last, but not least, there are some beautiful pictures of the farmers' wives who took part in the proceedings. I should like to ask if there are really more such fine-looking women in Wisconsin, taking them just as they come, or did they pick out their best? Not only butter-making but housekeeping in general is discussed—cooking, and even setting the farmer's table; and then the excellent talks that go along with these beautiful pictures—why! if these good people we get acquainted with in this book had a chance to handle the affairs of State and nation, our country would be in no danger; and if these bright and intelligent women were allowed to vote, the beer-brewers *certainly* would not run all our public affairs. One young lady gave us a talk on greenhouse work and growing plants at farmers' homes. Why! that talk was just worth a big lot to me. She had her pots and plants right on the stage, and went through the whole operation of making cuttings, pot-

ting plants, watering, and all the things that are so difficult to learn from books alone. Long live Wisconsin! The book is sent to Wisconsin people for 10 cts. paper, or 25 cts. bound in cloth; outside of the State, 25 cts. paper, or 40 cts. bound in cloth. Address Geo. McKerrrow, Agricultural College, Madison, Wis.

WAX BEANS AND BEANS IN GENERAL FOR 1900.

Some of the friends have no doubt thought it pretty hard that there should be such a margin between the paying price and the selling price of staple garden seeds. Perhaps a little incident will illustrate this. Eugene Davis, the originator of the Davis wax bean, wrote me some time in the fall that he had about a dozen bushels of Davis wax beans for seed that I might have for \$2.50 per bushel. I told him to send them along at once, and you may remember I advertised them at \$4.25 per bushel, which you no doubt think is a pretty good margin; but we found only one customer at this price among our gardening friends. He took, I believe, two bushels. But Vaughn, of Chicago, told me at once that he would take the whole lot at \$4.25; but if I sold out entirely at \$4.25 I should have none left to retail, so I let Vaughn have about half of them. Now, it would be folly to sell the remaining half at \$4.25 at retail when I was offered \$4.25 for the lot; besides, it would be an injustice to seedsmen to offer them at this price when they are asking from \$6.50 to \$7.00. You often do a neighbor harm by underselling him, especially where you are at the same time a good deal below the general market; therefore I have put what I have left at \$1.50 a peck. Of course I told friend Davis that, although the beans at \$2.50 was a fair and square bargain, yet since I found they were worth a good deal more I would divide with him the larger price I received. He expressed some surprise, it is true; but I tell you, friends, that is the way to do business. Now, when goods you have in stock advance in price as above, it is all very clear sailing; but suppose they go the other way, as they often do. Another thing, it is not certain that I shall sell all of my beans at \$1.50 per peck. I could sell them now, but the greater part of our customers will wait till planting time. Of course, we urge them to buy sooner, but past experience shows that a great many will wait until it is even late for planting, then send in their money, and want the beans "rushed." How many shall I save for such people? No one can tell. If I save too many, or carry them over to another season, I may not get even the \$2.50 I first paid friend Davis. A good many times I have had a chance to sell out my whole stock of certain seeds at a good profit; but a seedsman who really looks out for the best interests of his customers must keep a stock, and thus have more or less goods left over; and many kinds of seeds, after the season is over, are of little or no use whatever. Now, can you not see that, in order to have the very best fresh seeds constantly in stock, to be shipped the minute you receive the order, there must be a good round margin to cover unavoidable losses?

A SUGGESTION IN REGARD TO CLOSETS.

I want to say yes to all you said in regard to water-closets. How strange no more attention is given to such! While we all can not have them warmed, yet I took the idea long ago to pad the seats with old woolen cloth, tacking it on after being cut into shape. No one knows the pleasure, in a cold time, of sitting on woolen instead of a cold board. I feel quite sure more colds come from closet exposure than all others combined. Many times they are open so the wind comes in on all sides and below, and the awful disease consumption finds a starting-point.

E. P. CHURCHILL.

Hallowell, Me., Jan. 15.

CONVENTION NOTICES.

CALIFORNIA BEE-KEEPERS' CONVENTION.

The tenth annual convention of the California State Bee-keepers' Association will be held in the Chamber of Commerce, at Los Angeles, on Feb. 21 and 22, 1900. Convention will be called to order at 1:30 P. M., on Feb. 21. At this time the railroads will sell round-trip tickets to everybody, for one and one-third fare, on account of the Industrial, Mining, and Citrus Exposition, which will be held in Los Angeles. Tickets good for ten days. Let every bee-keeper bring some hive, tool, or experience which he has found valuable, and we will have a good convention.

R. WILKIN, Pres.
J. F. M'INTYRE, Sec.